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STARTING A

FARM in Ontario

**A Guide to
Living and
Farming in
Rural Ontario**

Publication 61

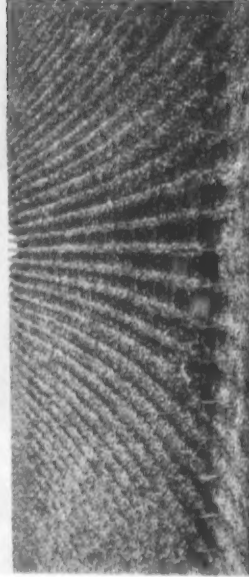
Ministry of Agriculture, Food and Rural Affairs

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**A Guide to
Living and
Farming in
Rural Ontario**

FARM **in Ontario**



Publication 61
Ministry of Agriculture, Food and Rural Affairs

Written by:

Ellen Helps, Project Coordinator
and Bill Baxter, Program Lead, Feasibility Analysis
Ontario Ministry of Agriculture, Food and Rural Affairs

With special thanks to the following for their contributions:

Mary Jane Combe, John Forsyth, Rob Gamble,
Delma Kennedy, Jack Kyle, Mark Leahy, Todd Leuty,
Ralph Macartney, Joan McKinlay, Anita O'Brien,
Bev Rawn, Diane Spratt and Brian Tapscott
of Ontario Ministry of Agriculture, Food and Rural Affairs,
and Terry Schwan
of Ontario Ministry of Natural Resources.

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owning a farm in Ontario offers many benefits to people who are seeking a different way of life or a new business venture. The opportunity to be one's own boss, to raise a family with as few outside influences as possible, or to control one's environment appeals to those who like to live and work close to nature in partnership with their family members.

But farming is not only a way of life. It is a business in which people strive to earn profit and a living wage. It is a business that incorporates all of the elements of a business in town, without the controls and predictability of an urban business. While giving the appearance of independence, the farm business relies on a great variety of other community people, businesses and services if it is to function successfully and profitably within the farming community.

Ontario's rural landscape has changed dramatically in the past 100 years. At the beginning of the century the vast majority of people made their living on the farm. Today, approximately 12 percent of Ontario's population farm. Perhaps as few as one-quarter of these families earn their sole living from the farm business. Off-farm employment plays a major role in today's farming lifestyle.

At the same time, farms are getting bigger. The average farm in Ontario consists of 206 acres of land area. Farm productivity has also increased tremendously. In 1900, the average Canadian farmer produced enough food to feed 12 people. Today, each farmer feeds more than 120 people.

In 1900, the average Canadian farmer produced enough food to feed 12 people. Today, each farmer feeds more than 120 people.

Many farms exist as hobby or part-time ventures. In 1996, roughly one-third of all farms earned a Gross Farm Income (GFI) of less than \$10,000. At the same time, 12 percent of farm businesses earned a GFI of more than \$250,000, so farming can be big business as well. Many of these larger operations have assets in the millions of dollars.

While living in the country offers many benefits to people seeking a rural way of life, those benefits do have a cost. Greater distance between homes and a low population density in rural areas means that services, like hydro, gas lines, road maintenance and fire and police protection are more expensive to provide on a per household basis. Water supply and sewage disposal are nearly always the responsibility of the homeowner, and distance from conveniences such as shopping, recreational activities and urban workplaces will likely add significantly to the time and travel demands on the rural family.

This relative isolation also makes rural property an easy target for burglars, especially if there is no one home on a regular basis. Programs such as Neighbourhood Watch and Block Parent are less effective because of the distance between homes. A well-trained, smart watchdog is often a good investment for the rural homeowner.

Owning a farm or rural property in Ontario can be what the owners want it to be. A farm can focus on lifestyle, with a goal of covering some of the family's living expenses, or it can be a serious business venture, rewarding its owners with a respectable living wage and satisfying returns on their investment.

But how does a farm business differ from an urban business? For one thing, your house will likely be on the business property. That's convenient—no commuting. It also means that if the business goes bankrupt, you lose your home as well, so effective business planning is absolutely essential before you start your farming venture.

Farming is affected by variations in weather more than most suburban or urban businesses. Usually these losses are in the order of 5–10 percent, but sometimes they can be more severe. Many farmers carry special crop insurance to help them through these rough times. (See "Risk Management Tools.")

On most farms, the whole family is involved in the farming operation. Children often help with the farm work from an early age. They often take on small enterprises of their own, like raising vegetables for direct sale, or raising pigs or calves. Farm youth organizations such as 4-H and Junior Farmers help to build networks and leadership skills among farm and rural young people.

So farming combines the elements of business with a way of life. Farm people and other rural dwellers differ in the emphasis they put on each of these facets. It's a matter of choice.



Why do you want to do these things? Is it a specific activity, an opportunity to work with nature or with animals, a sense of creativity or a real attempt to make a profit?

What to Consider Before Buying a Rural Property

In the previous section, we discussed country living. Now it's time to look at some details you should consider before purchasing a specific property.

What will the property be used for? Do you want to farm? Do you want to grow fruit and vegetables for market? Do you want to grow standard farm crops? Do you want to raise livestock for sale? For your own use only? Do you want to keep a horse?

Do you simply want to live in the country?

Why do you want to do these things? Is it a specific activity, an opportunity to work with nature or with animals, a sense of creativity or a real attempt to make a profit?

Like any business, the answers to these questions will determine what type of property you buy and where it is located. Some crops will

grow well only in the warmer areas of Ontario. Some crops have more tolerance for heavy or moist soils. Some enterprises, such as pick-your-own fruit and vegetables, will be better suited if they are located close to urban centres on main traffic routes.

It is a good idea to consider all aspects of a new community before purchasing a property.

How will this move affect your lifestyle and cost of living? How will you benefit from living in a rural community? Factors such as commuting distances, road quality, fire, ambulance and police services and taxes will impact on your new life in rural Ontario.



Water Supply and Quality

A clean and plentiful supply of water is vital to the success of the farm and to the health of the farm family. Clean drinking water must not be taken for granted. To prevent contamination, a well should be located upslope from any potential contamination sources, capped and sealed.

Drinking water should be tested annually for bacterial contamination. Your local Public Health Unit may provide this service, as well as telephone advice and brochures on water quality.

There are two main types of water wells: shallow and deep. A shallow well is

usually approximately 1 m (3–4 ft) in diameter and 5–10 m deep. A deep well may have a 15 or 23 cm (6 or 9 in.) casing, extending 15–70 m (50–230 ft) or more into the ground. The type of well you dig, bore or drill will depend on the availability and type of ground water in the area. A quick visit with a few neighbours, or a discussion with some local well drillers, will help you determine your options.

Drinking water should be tested annually for bacterial contamination.

Well drillers and borers must file information with the Ontario Ministry of the Environment concerning every well they drill or bore, including depth, casing size and flow rate. This information is available for all municipalities in Ontario.

Sewage Disposal

Where there is no municipal sewage system, all household waste water must be disposed of via a septic system. The size and design of the tank and weeping bed system will depend on the size of the house, and the number of people living in it. Appliances that use a lot of water and detergents, such as dishwashers and automatic washers, will influence the size and type of septic tank and weeping bed required.

Based on average usage, the septic tank should be pumped out every three years. This must be done by a licensed contractor, because the waste must be disposed of in an approved manner and location. It is illegal to spread untreated human sewage on farmland.

Licensed contractors are available in every community to install and maintain septic systems. A *Certificate of Approval* is required before constructing, installing or altering a septic system in any way. Contact your municipality for information on obtaining the necessary approvals.

Waste Disposal

Regular garbage pickup is not available in every rural community. Rural waste material that cannot be composted, reused or recycled must be taken to the local waste transfer station. Hazardous materials such as out-dated medications, veterinary products, paints, cleaners, lubricants and their containers, used motor oil, insulation, pressure-treated lumber, and batteries, must be taken to a recycling depot or a designated hazardous-waste disposal site.

Dead animals must be disposed of within 48 hours by either burial or through pickup by a licensed Dead Animal Collector. Burial must be under 0.6 m (2 ft) of earth, located away from a well or surface water source, and in soil that restricts seepage.

Drainage and Water Law

Ontario landowners have certain rights and responsibilities concerning the use of water. The *Drainage Act, 1975*, provides for the rights of landowners to get rid of unwanted or unneeded surplus water on their properties. According to tradition, drainage water is divided into three classes:

- water flowing in natural watercourses
- water flowing through artificial channels
- water flowing over the surface of land

It is the removal of surface water, or of excess groundwater that stays in the soil too long, which causes the most problems for farmers and landowners.

Tile drainage of farmland provides a number of benefits to farmers. It improves the ability of the soil to breathe and warm up, providing more optimum conditions for seed germination and growth. It improves the soil structure, so that a higher proportion of the rainfall filters into the soil, and it allows more water to be made available to the growing plants.

A well-drained farm soil is more resistant to compaction by machinery and livestock than wet soil and less susceptible to erosion from surface water. Because it allows earlier planting, faster germination and more uniform crop growth, crops grown on tiled land will yield larger crops and are less susceptible to disease than crops grown on cold, damp, compacted soils.

The economic benefits of tile drainage vary with the "wetness" of the soil, the value of the crop being grown and the production potential of the land. Data collected in Ontario and Ohio shows yield increases of 15-115 percent in normal farm grains. In certain high-value crops like tomatoes or oriental vegetables, the economic benefit could be in the thousands of dollars each year.

The *Drainage Act* allows landowners along a watershed to establish municipal drainage systems to carry away unwanted surplus water. These systems can include open ditches, pumping stations, dikes, and/or tile

drains. These municipal drains are established by a majority vote of the affected landowners, and paid for by a levy on the municipal tax assessment.

The *Tile Drainage Act* makes it possible for individual farmers to borrow money from the municipality at reduced interest rates to install tile drains to drain land into the municipal drain. Again, repayment of this loan is through the municipal tax assessment. Before buying a farm, it is advisable to check at the township office to determine whether there is any drainage assessment involving the property, or an outstanding debenture under the *Tile Drainage Act* or *Drainage Act*. A plan showing the location of municipal drains is also available from the municipality.

Water may be drained into an adjoining **natural watercourse**, provided that the watercourse has **sufficient capacity** to handle the increased flow. Landowners also have the right to receive water in a natural watercourse as they, or the previous owners, have been accustomed to receiving it. Water may be taken from a natural watercourse for irrigation, pond-filling, aquaculture or other farm purposes, provided not more than 50,000 litres is removed daily. Beyond this usage, a Permit to Take Water must be obtained annually from the Ontario Ministry of Environment.

If a portion of the water is removed from a natural watercourse, a reasonable amount must be allowed to flow on downstream. A landowner who disrupts

watercourse, by constructing a dam or installing a culvert, for example, or by taking too much water, becomes liable for damages resulting from the action.

A Farm Pond

A farm pond can serve many purposes: a source of water for livestock or irrigation, a swimming area or a wildlife habitat. These uses should be determined before building the pond, so that the site, shape, depth and size of the pond will be suitable. The water source and the soil type also affect pond design and location.



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Pond owners will need to be sure that they have all the necessary permits before beginning construction. Approval from one agency does not guarantee approval from another. **The following permits may be required:**

- a permit from the local Conservation Authority if the pond is to be constructed on a floodplain or involves altering a watercourse
- a permit from the Ministry of Natural Resources to construct a dam or divert water from a natural watercourse
- a permit from the Ministry of the Environment if water comes from a natural watercourse at a rate exceeding 50,000 litres a day
- a permit from the Ministry of the Environment to use herbicides to control aquatic vegetation
- a permit from the Ministry of Natural Resources to transfer fish if the pond is being stocked
- a resident sport-fishing license if you plan to fish in a pond that is fed by a stream flowing through the property

Woodland Stewardship

Farm woodlots are an important part of the farm landscape. Forested land provides environmental, social and economic benefits to the farm owner. In fact, a well-managed forest can be an important source of farm income. Trees, like all other plants, grow, mature, become diseased and die. A well-planned program of harvesting mature trees keeps the forest young, healthy and productive, providing income and pleasure to the landowner.

While traditional forest products like saw logs, fuel wood and maple syrup continue to be important income sources for many woodlot owners, opportunities also exist for specialty woodland products and services. These include niche products such as basswood for carving, black ash for basketry and foods such as fiddleheads, wild leeks and mushrooms. The forest can also be a habitat for nutraceuticals and medicinal plants. Charging a fee for hunting, fishing, hiking, snowmobiling or other trail uses is another way of realizing the financial benefits from the forest lands. However, these activities may adversely affect developing trees and wildlife habitat.

Today's woodlot owner must be knowledgeable about tax regulations, property rights and ecosystem management. Under the Managed Forest Tax Incentive Program (MFTIP) qualifying managed woodlots, at least four hectares (10 acres) in size, are taxed at 25 percent of the residential tax rate—the same rate as farmland. A Managed Forest Plan Approver must approve the

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woodlot. Application for the program is made to the Ontario Woodlot Association (OWA) or the Ontario Forestry Association (OFA).

Consult a chartered accountant, lawyer and municipal clerk concerning the tax and legal implications of making any change in land use and non-farming practices.

Allowing livestock to graze in a woodlot destroys the ecosystem by damaging the bark on existing trees, preventing seedlings from developing and compacting the soil in the woodlot. Because a healthy woodlot produces very few agriculturally productive grasses, the livestock owner benefits very little by allowing livestock to pasture in the woodlot.

A healthy woodlot provides habitat for a wide range of forest, plant and animal species. Woodlots that provide the best habitat for wildlife contain a mix of species, and trees of all ages and sizes. A healthy woodlot is a healthy ecosystem.

Woodlot Management

Forest management and harvesting practices are specialized skills, so it is important to seek professional advice in order to evaluate and manage an existing woodlot. It is also important to understand sound forestry principles for harvesting to get the greatest benefit from a productive woodlot.

Good forestry practices provide improved wildlife habitat, recreational opportunities, a pleasant landscape, reduced wind speeds and improved water quality as well as commercial forest products.

Good forestry practices provide improved wildlife habitat, recreational opportunities, a pleasant landscape, reduced wind speeds and improved water quality as well as commercial forest products. Some municipalities have enacted tree-conservation bylaws restricting and regulating the cutting of trees. Timber sales should be administered with the help of a qualified professional forester or forest technician working as an agent for the woodlot owner. Only trees identified by these qualified individuals should be sold. The consultant will prepare a contract of sale protecting the landowner and the land from unscrupulous harvesters or harmful practices.

Farms often have some land areas that cannot be cultivated and so should be retired from active agriculture. This land may be hilly, poorly drained, prone to drought or simply awkward to crop because of size or shape. Such lands can be planted to trees. Conifers (evergreens) or hardwood trees may be planted successfully although some species are more tolerant of extreme conditions than others.

Understanding the relationship between tree species, climate, soil type and water tolerance is very important in establishing a successful forest plantation. Most conservation authorities and private forest consultants offer advice to guide the owner in reforestation procedures and will facilitate a reforestation program.

The Carolinian Forest Region reaches into Ontario, forming a crescent-shaped area along the north shore of Lake Erie and southern Lake Huron, from Niagara to Goderich. This region is home to many nut species such as butternut, black walnut, hickory and edible nut species such as beech, heartnut and shag-bark hickory. These wild nuts are an important food source for wildlife, and some may be sold for human consumption as well.

Agroforestry

Agroforestry systems combine agriculture or horticulture and forestry practices to produce food, forage, timber and other marketable products from farmland. While a commercial tree plantation is being established, agroforestry allows a landowner to harvest some saleable farm produce from the land.

One new and intriguing form of agroforestry is "timberbelting" around the perimeters of farm fields. This practice, developed by New Zealand farmers, places windbreaks around the fields to reduce wind damage. These timberbelts are a combination of high-value softwood and hardwood trees. A system of trunk

pruning during tree growth enhances the value of the trees by producing knot-free timber at harvest. As the tree grows, branches are removed before they reach one inch in diameter. Traditional cropping in the field continues unchanged and unhindered, with yield increases and reduced soil loss due to effective wind management.

In another application, solid tree plantations are made with hardwoods inter-planted among conifers. The conifers provide protection for the deciduous trees, and both species are trunk-pruned to provide high-quality timber. As the conifers mature, they are harvested, leaving room for the slower-growing and higher-value hardwoods to develop into mature timber. In this application, the trees are "cultured" to produce a marketable product. This differs from reforestation in that the species are planned and managed in the same sense as a perennial agricultural crop.

The benefits of agroforestry include landscape and income diversification, environmental protection, wildlife habitat improvement and economical yet sustainable use of farmland. Water quality and groundwater nitrate levels may be improved through the use of timberbelts, windbreaks and stream buffers, which absorb farm nutrients and prevent runoff into watercourses. Hardwood forest stands improve the land's value as the trees mature, guaranteeing a good return on the landowner's investment over a period of time.

Private Land Resource Stewardship Program

The Ministry of Natural Resources' Private Land Resource Stewardship Program emphasizes the development of community partnerships to influence private land stewardship and resource management. Through community-based Stewardship Councils, the program fosters responsible land care with workshops and seminars on proper woodlot management. Many landowners, supported by Stewardship Councils and the Ministry of Natural Resources, have formed woodlot associations to educate members. Your local Ministry of Natural Resources office can provide information on Stewardship Councils.

Environmental Farm Plans

Environmental Farm Plans (EFP) are prepared voluntarily by a farm family. These plans highlight environmental strengths on their farm, identify areas of environmental concern, and set realistic goals to improve environmental conditions on the farm according to the owners' timetable.

Agriculture and Agri-Food Canada (AAFC) provides an incentive of up to \$1,500 per farm business to complete an EFP. Participating farmers identify environmental concerns and practices on their farm and design plans to overcome these shortcomings. Certain criteria must be met to receive the incentive. In addition to the cash incentive, EFPs help farmers save production costs and prevent environmental liabilities.

The program is administered by the Ontario Soil and Crop Improvement Association (OSCIA), a voluntary association of farmers interested in the improvement of farmland and cropping practices across Ontario. There are local associations in most counties in Ontario. To locate the Soil and Crop Improvement Association in your county or district, contact the OSCIA as listed in the *Reference* section on page 102.

The Farm Business



onsider the farm to be a department store. Each enterprise, like crops, sheep or pick-your-own strawberries, for example, is a separate department, in the way that women's clothing, children's clothing or shoes are in the store. But there is only one bank account (separate, of course from the owner's personal account). Which departments, or commodities, contribute most toward the bank balance, and which ones detract? The only way to know is to keep track of the activities, costs and returns in each department or enterprise, and of each product class in that department or enterprise.

Farming is, in some ways, more complex than the department store. Many factors beyond the farmer's control contribute to the production and sale of his produce.

These factors need to be considered before the farmer decides to enter a particular enterprise, in the same way that the storeowner decides what the economic climate is that affects, for example, women's wool suits.

So budgeting, record keeping, market analysis and preparing business plans are all part of the successful farm manager's tool kit. They enable the farmer to decide which activities to undertake, which ones to expand, and which to reduce or eliminate in order to meet business goals.

...keep track of
the activities,
costs and
returns...

Preparing a Business Plan for the Farm

A BUSINESS PLAN serves two purposes. It serves as a guide for decision making in the day-to-day operation of the business, and it helps to explain the business to lenders. If thoroughly prepared, the plan will ensure that entrepreneurs have considered all of the aspects of business development that will impact on the new business, before they make the investment.

A business plan states the entrepreneur's goals and proposes how those goals will be achieved. The plan usually identifies the product or service that the business will provide, the customers, competition, production and marketing plans, how all aspects of the business will be managed, and how the financing will be organized. Because many new businesses fail due to poor planning, preparing a comprehensive business plan improves one's chances of success.

Lenders will look to the business plan as a statement of the business's financial viability. They want to know that their loans can be repaid out of the day-to-day business, and that the owner will get a good return as well. A completed business plan will probably be required in order to obtain financing.

When preparing the farm business plan, ask yourself these basic questions:

- ☐ What do I expect to achieve in income and lifestyle from this farming venture?
- ☐ What do I need to know so that I can be successful in the type of farming I want to enter?
- ☐ What markets are there for my products, and how do I access them?
- ☐ How much time and effort am I willing to devote to the farm business?
- ☐ Do my spouse/partner and I have similar expectations regarding the farm enterprise?
- ☐ Is this the way we really want to live?

Of course, each of these questions will give rise to several more questions. Eventually, they will lead you to the answers you seek. If you keep an open mind, you will arrive at the decisions as to whether and how you wish to undertake this business.

THE MARKETING PLAN, a major component of any business plan, outlines how the customers' needs match the product or service provided. Developing a marketing plan involves market research, goal setting and evaluation.

Ask yourself these questions:

- ☐ What is my product and service?
- ☐ Who are my customers, what do they want and how much will they buy?
- ☐ What are they willing to pay for it?
- ☐ What is the best way to get my product to the customers?
- ☐ What is the best way to package it?
- ☐ What are the best ways to tell them about it?
- ☐ What features of the product or enterprise will bring them back for more?

THE PRODUCTION PLAN describes how the product will be produced, how it will be prepared it for sale, and what services will be provided with the product.

Ask yourself:

- ☐ What do I need to know about production of this product?
- ☐ How much of it do I need to meet the demand? Can I meet an increasing demand?
- ☐ What will the product cost? Are there ways to reduce this?
- ☐ Is there sufficient margin of profit between cost and price?
- ☐ Is the profit margin worth the risk?

THE HUMAN RESOURCES PLAN describes the labour needs of the business. **Consider:**

- ☐ How many hours of labour do I need to develop and to operate this business?
- ☐ How many hours can my family and I provide? How will they be paid?
- ☐ How many hours of labour will I need to hire, and in what form? What will I need to pay them?
- ☐ What benefits am I required to pay for my employees, and myself, and which other benefits do I want to provide?
- ☐ How much additional revenue will each unit of labour generate for the business?

THE FINANCIAL PLAN describes how the business will be financed. **Examine these areas:**

- ☐ What financial resources do I have to contribute?
- ☐ What will it cost to get this business into operation?
- ☐ What will I need to operate the business until there is enough cash flow to start paying back loans? How long will this take?
- ☐ What sources of financing can I access to get what I need, with a comfortable margin?
- ☐ What will my financial position be after the first five years of business?

These four plans, plus the *executive summary*, a one- or two-page analysis of the business, make up the complete business plan. Start it with a *mission statement*, a simple statement of what your hopes and dreams are for this business. Frame the mission statement and hang it on your office wall where you will read it every day. It will help keep the business on track.

Consider the business plan to be your study of the business, for your own information, and for your own benefit, and it will be much more satisfying and meaningful.

Any business, whether full time or part time, is still a business. Even as a part-time venture, it can grow and prosper, developing into a lucrative, full-time business, or it can decline. Entrepreneurs should do their planning on paper before they spend any great amount of cash. It is not unusual to spend 10 percent of the cost of a business in getting information, and planning, before the business is started. That makes a lot more economic sense than finding the pitfalls after the investment is made.

Record Systems

Records provide the basis for good accounting and planning, so it is important to keep accurate records of both the financial and physical aspects of the farm business. Record keeping is more enjoyable and satisfying if the system is simple and easy to use. If the records show how the business is doing from month to month, record analysis can become a game, instead of a chore.

Just like golf, the main challenge is to beat yourself.

A system that shows more pigs weaned, or greater sales volume than last year, can make record keeping and analysis a rewarding part of the business operation.

While tax management is a significant and vital part of record keeping, it should never replace business management as the sole reason for the records.

Financial records include all income and expense items, credit transactions, and valuations of all capital and inventory items. Physical records include items such as grain yields, quantities of feed and/or fertilizer purchased, livestock weights, production per animal, etc. The physical and financial records must be set up in such a way that they inter-relate. In this way, the astute manager understands that an expenditure here will result in a profit or loss there. That's the fun part of record management.

Accurate records will assist with budgeting, supply the information required for the preparation of financial statements, and provide the necessary information to fulfill the requirements of the Canada Pension Plan, Employment Insurance, Employer Health Tax, Workplace Health and Safety Insurance Board, Income tax, Goods and Services Tax and Ontario Sales Tax.

Ontario Farm Management Analysis Project

The Ontario Farm Management Analysis Project (OFMAP) is designed to provide management information to farmers by helping identify profitability, strengths, weaknesses and efficiency of farm businesses. OFMAP gives managers the opportunity to compare their farms' financial results with budgeted plans for the year and with other similar enterprises. With continuous participation they will be able to compare yearly trends in performance and profitability.

Managing Farm Labour

Depending on the size and nature of the farm business it may be necessary or beneficial to hire additional labour, either on a full-time or part-time basis. Fruit and vegetable production usually requires help, at least during harvest, and sometimes during planting and the growing season. Livestock enterprises, if they exceed the work requirements of the family members, may require year-round assistance.

The availability of labour for farm work is an ongoing challenge in Ontario. Typically, full-time farm employees are not as highly paid as factory workers are, and the type of work does not appeal to everyone. Small employers may not be able to offer the benefit packages that are available in larger workplaces, which places them at a further disadvantage in attracting competent labour.

Sometimes, a house on the farm is offered as part of an employment package.

However, many people do prefer to work outdoors, with animals or machinery, and prefer the farm environment and lifestyle. There are others who look for seasonal work or part-time employment. Employers who provide competitive wages, respectable hours, and clean, safe working conditions usually have minimal problems finding and keeping good employees. In fact, many seasonal workers return to the same farm year after year.

Today's workforce is increasingly mobile. Employees are more willing than ever to find the job that offers the satisfaction and compensation they are seeking, so if the farm business is not able to offer job growth and development, the manager should be prepared to experience periodic employee turnover.

Deciding to become an employer requires careful consideration. Managing employees at arm's length is different from managing family members, and will likely change how the new employer operates the business. Labour laws, payroll management, contributions for benefits, vacation allowances and working conditions will become a more structured part of your management and operating style.

The creation of a new position must benefit the owner, the family and the employee. A contented and self-motivated employee is more likely to add positive returns to the business than a discouraged one. Having

the job clearly defined, spelling out the chain of command and the relationship of the employee and other family members, along with reasonable working conditions, pay and vacation will go a long way in creating productive and satisfied employees.

Before hiring, write down the objectives for each job. A separate file for each employee should be maintained so the manager can refer to these objectives when evaluating the employees and making management decisions. Here are some questions to consider before making the decision to hire:

1. What type of help do I need: short-term, part-time, full-time seasonal or permanent?
2. Do I have sufficient cash flow to maintain the type of employee(s) I need?
3. Will the job keep the interest of a highly motivated employee?
4. What is the payback associated with the addition of hired labour?
5. Do I have sufficient people skills and patience to train, supervise and evaluate employees?
6. What type of employee is best suited to the job?

Source: Employers' Handbook for Agriculture and Horticulture

When planning labour requirements, Table 1 may help in budgeting labour costs. Remember that the cost of hiring includes wages plus employer's contributions to Canada Pension Plan (CPP), Employment Insurance (EI) and Workplace Health and Safety Insurance Board (WHSIB) premiums. These are mandatory contributions, and can add significantly to the cost of hiring. On the other hand, these benefits contribute to the availability of labour for farm work in Ontario.

Table 1 Planning Labour Needs

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Various enterprises require different kinds and amounts of labour. Tables 2 and 3 give examples of the labour requirements for different crop and livestock enterprises. All or part of this requirement may be supplied by family members, and the hours needed may be more or less, depending on the size, equipment and labour efficiencies involved. They are offered here simply as guidelines for planning labour needs.

Table 2 Hours of Labour Required

CROP	HOURS PER HA. HOURS PER AC.	
Grain Corn	7.5	3.0
Silage Corn	10.5	4.2
Soybeans	6.5	2.6
Spring Grains	5.2	2.1
Hay	11.2	4.5
Cucumbers	846	342
Processing Tomatoes (hand picked)	289	116
Processing Cabbage	155	62
Processing Red Beets	123	49

Table 3 Number of Livestock Per Full-Time Labour Equivalent

SPECIES	NUMBER PER PERSON
Dairy cows	30-40
Beef cows	100-125
Feeder cattle	*200-500
Sow farrow to finishing (sows)	40-50
Sow farrowing	80-120
Feeder pigs	*2,000 per year
Ewes (with lambs)	300-400
Caged laying hens	*10,000-30,000
Broiler chickens (8 weeks)	*50,000

* Additional per diem help may be required for tasks such as cleaning out, weighing and loading.

Paying wages to family members for their work on the farm is a tax-deductible expense to the farm business. Also, splitting income among family members may reduce the family's total income tax bill. The *Income Tax Act* requires that payment must be commensurate with actual work done, with respect to age and abilities of the family members.

Managing Risk

All businesses contain an element of risk, and farming is no exception. There is risk of crop loss due to weather or disease; late or early frost; risk of price dropping below the cost of production; risk of livestock losses because of disease, price or management factors; risk of being sued for livestock escapes, environmental pollution, or other public liabilities; and risk of high interest rates due to uncontrolled inflation.

Of all of these risks, the only one that farmers can control completely is their ability to manage their businesses. The decisions farmers make can place their businesses in jeopardy or can determine whether the benefits from a course of action outweigh the risk of taking the action. While farmers cannot, and should not, avoid risk completely, they can minimize the chance that a risk factor will happen, or the effect of the risk factor if it does happen.

Reducing the chance that the risk factor will happen at all is one of the goals of business planning and management decisions. By thoroughly understanding the factors of production and knowing what can go wrong, and why, a farmer can avoid many of the risks inherent in an enterprise. By simply choosing enterprises that have a history of profitability, and selecting crops or stock that have a margin of safety, can reduce the chance that a loss may occur.

Farmers can reduce the effect of risk by controlling their debt-to-asset ratios and by participating in the various safety-net programs that are discussed later in this chapter.

Risk Management Tools

1. Budgeting

Carefully prepared budgets will help in deciding which actions or enterprises should be undertaken, and which are not worth the risk. The use of sensitivity analysis or "what-if" scenarios can help in deciding whether the idea is likely to be successful under varying conditions. OMAFRA has a computerized, risk-rated budgeting program called B.E.A.R. (Budgeting Enterprises and Analyzing Risk) that evaluates the susceptibility of an enterprise to risk factors. B.E.A.R. is on CD-ROM and may be purchased from the Government Information Centre (p. 108).

2. Hedging

Commodities can be hedged to protect against price fluctuations on the market. A producer may take a position in the futures market which is equal but opposite to an existing cash market position. Changes in cash price of the actual commodity may be offset by fluctuations in the future prices offered by speculators.

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3. Forward Contracting

In some cases, it may be possible to contract with a supplier, or marketing board, to supply all or part of the farm production at a pre-arranged price. If you know your cost of production, you can reduce the price risk on that commodity by changing your production or marketing strategy according to the contract terms.

4. Net Income Stabilization Account (NISA)

This program was set up several years ago to allow farmers to contribute during good years to their own personal stabilization account. The federal and provincial governments match these contributions. The farmer may draw against these accumulated funds during periods of reduced income. For information, call 1-800-665-6472.

5. Crop Insurance

This program insures against yield loss on specified crops. Federal and provincial governments, who also pay administrative costs, match producers' premiums. In Ontario, Agricorp manages this program.

6. Self-Directed Risk Management Pilot Project

This Ontario-specific pilot project allows for the payment of an additional government contribution to match each producer's deposit to his or her NISA account.

7. Market Revenue

This program provides support to farmers when the market price for eligible grain and oilseed crops falls below the support level calculated by the program.

For more information on safety net programs, contact Agricorp at 1-888-247-4999.

Farm Credit in Ontario

Farming, whether it is full time or part time, is a business. It requires investment and operating costs that are beyond the personal financial reserves of most people. Credit is available for farmers, as for other business people, although the sources may be different. Chartered banks are the main lending sources for farm businesses. Credit Unions and Caisses Populaires are also active lenders to farmers. The Farm Credit Corporation (FCC) is a national crown corporation whose mandate is to lend capital to farm or farm-related businesses.

The farm supply trade sometimes extends credit to its customers in the form of deferred payment plans, leasing options and regular payment options. This is most frequently practised by livestock feed suppliers and farm machinery companies. Private borrowing is still a common practice for mortgages, vehicles and special projects.

To obtain loans, the two most powerful tools the farmer has are *collateral* (equity) and *business skills*. Having sufficient collateral, or net saleable assets, to cover the loan reduces the lender's risk in making the loan, and increases the borrower's chances of being able to negotiate a better rate. A history of running a business successfully, and presenting a complete and realistic business plan, are two ways farmers can demonstrate their business skills. Complete knowledge and under-

standing of the farming enterprise are also important.

It is critical that the money borrowed for a particular item will be repaid before the item is worn out or sold. If the repayment period on a tractor loan is 15 years, and the tractor is worn out af-

ter 10, the owner would still be paying for the old tractor while trying to finance a new one. It is preferable to have the asset paid for while the asset still has useable life. The shorter the loan period, the lower the cost of borrowing at the same interest rate.

Because the repayment period matches the use, loans are classified as *operating* (short-term), as *intermediate-term* or *long-term* loans.

Operating loans are usually arranged with the lending institution in the form of a *line of credit*. The operator calculates the amount of money needed to run the business for a year, and this amount of "credit" is extended, to be drawn as needed on a daily interest basis. The operator can then write cheques and repay the line of credit as often as desired, as long as the amount allowed by the line of credit is not exceeded. This "line" is renegotiated at the end of each fiscal year or sooner if necessary.

Items that have a lifespan of between one and 10 years are often financed by a *chattel mortgage*. In this

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case, a loan is made for the purchase, to be repaid over a stated period. The lender has claim to the asset (tractor, cow, etc.) named if the loan is not repaid at the end of the term.

Long-term loans cover land and buildings, and any other asset that has an expected lifespan of greater than ten years. These are usually in the form of true mortgages of 10–25 years, with terms of six months to five years until the principal and interest are all repaid.

Using Budgets

Budgets are part of the financial plan portion of the business plan. They are important tools to use when planning any major purchase or change in the capital or operation of a business.

A realistic budget, forecasting revenue and costs, is vital for evaluating the feasibility of a proposed venture. A monthly *cashflow projection* for the 12 months ahead is also useful when planning credit needs and debt repayment schedules. Cashflow projections for 3–5 years are often requested by lending institutions when financing a new business or venture.

Budgets may be *full* or *partial*. A *full budget* considers all of the costs and returns associated with an activity. This technique is used when planning an enterprise from scratch. A *partial budget* is often used when planning a minor change. It considers only the *added expenses* and *added income* resulting from the proposed change. Added income may result by increasing the sales revenue or by reducing costs, or both, while added expenses may result from increasing costs or reducing sales revenue. The difference between added income and added costs is the extra profit (or loss) the manager can expect to receive.

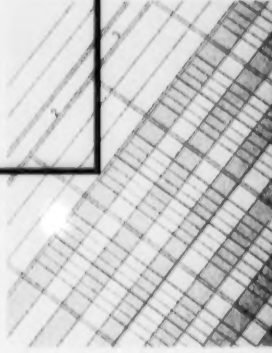


Figure 1 Partial Budget Form

Partial Budget

Proposed plan:

ADVANTAGES		DISADVANTAGES	
ADDED ANNUAL REVENUE		ADDED ANNUAL EXPENSES	
Custom Work	\$	Fixed:	
	\$	Taxes and Ins	\$
	\$	Lease and Rent	\$
	\$	Interest	\$
	\$	Depreciation	\$
	\$	Variable:	
	\$	Repairs	\$
	\$	Fuel	\$
	\$	Labour	\$
Total	\$	Total	\$
REDUCED ANNUAL EXPENSES		REDUCED ANNUAL REVENUE	
Fixed:			
Taxes and Ins.	\$		\$
Lease and Rent	\$		\$
Interest	\$		\$
Depreciation	\$		\$
Variable:			
Labour	\$		\$
Fuel	\$		\$
Equipment repairs	\$		\$
Seed and plants	\$		\$
Other	\$		\$
Total	\$	Total	\$
Total Added Income	\$	Total Added Cost	\$

Renting / Leasing Arrangements

A large capital investment is required by anyone wishing to operate a commercial farm, especially if he or she wishes to devote full time to the business, and receive a full-time salary. The potential income from any given set of resources—capital, land, expertise, etc.—varies greatly from one farm type to another and depends mostly on the skills of the manager.

Agricultural land may be farmed using the owner's labour and capital, worked by a custom operator hired to do the fieldwork, or it may be rented out to a tenant farmer. Renting is desirable for many people who have neither the time nor the resources to farm full time. Although only a portion of the fixed costs might be covered by rent, renting the productive assets to a neighbour may still be the best economic alternative for people who are mostly seeking a rural lifestyle.

If the owners want to accept the risks and benefits of planting, harvesting and selling a crop, but the size of the crop does not justify the investment in equipment, they can hire one or more custom operators to do the work. This practice is common on small farms, and actually reduces the cost of production by reducing interest, labour and maintenance costs. Often the cost of owning machinery for a small acreage is greater than the return from the crops on that land.

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Share cropping is a variation on this practice. In this system, a portion of the crop is used as payment instead of cash, so no money changes hands until the crop is sold. A

share-cropping agreement is signed and witnessed before anything is done. The custom operator then grows the crop on the owner's land, and returns an agreed-upon portion of the sale revenue to the owner after the crop is sold. This is explained in more detail under "Types of Leases."

Various land rental arrangements are used in rural Ontario. These include rental of all or a portion of the land or, alternatively, leasing the complete unit, including land, buildings, livestock and equipment, as an ongoing operation.

Types of Leases

Lease Fee or Cash Lease

A cash lease agreement (lease fee) is one of the most common types of leasing agreements. The cash lease provides a low risk to the landowner. The operator pays a predetermined amount for the use of the property, the owner's income is definite and often upfront. The agreement is generally kept quite simple and straightforward: the lessee makes operating decisions and the owner (lessor) looks after the capital costs of the asset. The

owner does not oversee the operation or address marketing concerns.

The lease fee or rental rate is based on the productive capacity of the farm, the crops to be grown and the local supply and demand for farmland rental. In the case of cropland or pasture, rent is usually based on a rate for each workable acre. In some agreements, the rental rate for pasture may be based on the weight gain of the cattle being pastured.

If the farm is rented as an ongoing operation, the cash fee may be related to the income of the whole enterprise. More often, an arbitrary rate is negotiated and agreed to by both parties.

Rental rates vary widely across Ontario, according to the value of the crop being grown. Tomato land in Kent County may lease for more than \$200 per acre per year, while some pasture land in Eastern or Northern Ontario may be available for as low as \$10. There is no registry that records the land rental market, so each separate transaction is a negotiated agreement between lessor and lessee. A written lease agreement covering all of the details is strongly recommended.

Share-Cropping Lease

In a share-cropping lease, the operator supplies the labour, equipment and/or livestock while the owner supplies the land, buildings and, possibly, a share of the operating expenses. The crop is sold or divided in prearranged proportions, for example, on a 50/50 basis. The

share-cropping lease represents the true return from the land more accurately than the cash lease. The landlord gains an opportunity to profit from higher yields if he provides more productive land for the crop. Both landlord and tenant gain through good cropping practices and higher yields and prices.

Livestock Share Lease

Livestock share leases are used mainly in the rental of pasture or grazing land. The livestock is weighed before and after being put on pasture. The lease fee is based on the amount of weight the cattle or sheep gain while on the pasture and the livestock price per kilogram at the time of sale. For example, if 50 calves gained 200 kg each, or 10,000 kg in total during the season and the selling price of cattle was \$1.50/kg, the dollar gain would be \$15,000. If the livestock share agreement were on a 70:30 basis, the rental charge would be 30 percent of \$15,000 or \$4,500 for the season.

Similar agreements can be written for cattle that are being overwintered in rented barns, especially if the property owner wishes to provide some feeding and maintenance services.

Custom Feeding

In some cases, the owner of market cattle will hire a farmer to feed cattle to market weight. The landowner provides the feedlot, the feed and the labour and management in exchange for a fee based on the weight gained by the cattle over a period of time. The ownership of the cattle does not change hands, and the owner of the farm gets paid for his skill in producing efficient weight gains.

Profit-Sharing Arrangements

An older farmer or absentee landlord who owns a complete operating unit may consider a profit-sharing arrangement. Generally, the operator is a young person with limited capital, livestock and equipment. This type of arrangement permits the young farmer to acquire the use of capital-intensive farming assets. The operator may share in the net income of the farm, or receive part of the crop or livestock in lieu of cash. This helps the young operator build equity toward owning a farm of his own. For this arrangement to work successfully, accurate records are imperative and the terms of the agreement must be well understood by both parties.

Suggested Farm Leasing Practices

For the financial protection of both owner and operator, real estate should never be occupied without a written lease. Both parties should meet annually to discuss plans,

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review the lease terms and make any necessary revisions, even if the lease is for more than one year.

Leases are customarily for one, two, three or five years. In any case, both parties should have the option of terminating a lease prior to a definite date if circumstances change sufficiently. A lease will often specify that a third-party arbiter be called to settle disputes if the principle parties are unable to agree to terms. Compensation to one of the parties may be necessary when a lease is terminated prior to its complete term.

Lease Provisions

While not required by law, it is often advisable to use a lawyer to draw up a lease agreement, and ensure that impartial witnesses witness it. Doing so often helps in resolving disputes that may arise. Completing the leasing arrangements early in the season is advisable so that both parties have planning time before the lease is acted upon. Long-term agreements should be registered with the Land Registry office.

In general, the landowner, or lessor, is responsible for maintaining the property and making any permanent improvements that improve the value of the property. The operator (tenant or lessee) is responsible for the costs of operation, repairing items related to the operation, and leaving the property in the same condition at the end of the lease as it was at the beginning.

The following are the recommended minimum components for a lease agreement:

- ☐ the name and address of both parties
- ☐ a legal description of the property
- ☐ beginning and ending dates of the agreement, provisions for rendering possession at both dates, and provisions for renewal or termination
- ☐ the proportions of share or the lease fee. The place and time of crop delivery or the time, amount and place of payment should be included
- ☐ the signatures of all parties and witnesses who are unrelated to the agreement

Other useful provisions:

- ☐ permanent improvements that the tenant might install or repair
- ☐ adjustment of rent in case of crop failure, loss of a building or disaster
- ☐ right of entry of landlord
- ☐ upkeep of fences, drainage tiles, watercourses and minor repairs to buildings
- ☐ landlord's right to place a lien on crops and livestock, receive interest on deferred rent payments, and collect penalties for default or failure to make payments
- ☐ written permission to sublet land or buildings

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Other useful provisions:

- permanent improvements that the tenant might install or repair
- adjustment of rent in case of crop failure, loss of a building or disaster
- right of entry of landlord
- upkeep of fences, drainage tiles, watercourses and minor repairs to buildings
- landlord's right to place a lien on crops and livestock, receive interest on deferred rent payments, and collect penalties for default or failure to make payments
- written permission to sublet land or buildings

Types of Business Structures

A business may be a sole proprietorship or a partnership. It may be operated as an unincorporated private business or as a corporation. There are sound business reasons for choosing any combination, based on the goals of the owner and the size and nature of the business. Each has advantages and disadvantages.

Table 4 Business Organization

ADVANTAGES	DISADVANTAGES	ADVANTAGES	DISADVANTAGES
1. Sole Proprietorship			
complete independence of ownership	unlimited liability		
greatest flexibility in decision-making			
low start-up costs			
greatest freedom from regulation			
tax advantage to small owner	profits are taxed at personal tax rate		
	sharing profits and growth may be difficult		
all profits go to owner			
2. Partnership			
ease of formation	unlimited liability		
lower start-up costs per person	share profits among partners		
extra person to contribute to capital	divided authority		
broad management base	more complicated decision-making		
possible tax advantage	may be difficult to find suitable partners		
allows income-splitting	need records of who owns various assets		
limited regulation	partners' skills may not be complementary		
	each partner responsible for debt incurred by other		
3. Corporation			
limited liability			complex tax regulations
specialized management			most expensive form to organize
ownership is transferable as shares			extensive record keeping necessary
continuous existence			higher accounting fees
self-sustaining legal entity			expensive and difficult to "wind down"
tax-deferral opportunities if income is high			corporate taxation
easier to raise capital			
flexibility in income splitting			

Most farm businesses begin either as sole proprietorships or partnerships. In either case, the owner or owners assume full responsibility for the management, and most of the labour, of the farm. The profit from the business becomes the personal income of the owner or partners.

A partnership may be between a husband and wife, two or more friends, total strangers or any two or more people who agree to work together. This is the most fragile of all business structures, because responsibility for the decision making is shared more or less equally between partners. Disputes will arise from time to time, and a means of resolving them should be built in to the partnership agreement.

Partnerships do not have to be equal, and it may work best if the decision-making responsibility and profit sharing is done on the basis of financial contribution. According to law, the profits must be split according to the contribution of each partner. Wages can be paid according to the terms of the partnership agreement.

Corporations are formed to defer taxes, reduce personal liability and facilitate the transfer of the business to new owners. Generally speaking, the corporation does not offer an advantage over sole proprietorship until the taxable income of the business reaches a relatively high level. The income of Small Business Corporations is taxed at a low flat rate, up to the first \$200,000 of active business income. This acts as a tax deferral for money that is left inside the corporation.

Officers of the company are normally paid a salary as personal income. Profits may be shared as dividends at a relatively low personal tax rate. However, these dividends are declared after corporate income tax has been paid.

In law, the liabilities of the corporation are limited to its assets. This means that the creditors of the company cannot claim against the personal assets of the officers of the corporation. However, shareholders and officers are usually required to guarantee the loans to the company in order to borrow capital or operating loans, so the extent to which the liability is limited may be questionable in a private corporation.

Officers of a corporation are responsible for the decisions and actions of the company, so they may be sued for any illegal or immoral actions of the company. Incorporation is not designed to be protection against irresponsible or illegal business practices.

Where two or more people form a private limited company, they should consider drawing up a shareholders' agreement. This agreement will spell out the responsibilities of each shareholder, the dispute mechanism and possibly the provisions for exiting the business, if any partner should choose to do so.

Whether planning a corporation, partnership or single proprietor business, entrepreneurs need to develop a good working relationship with a chartered accountant and lawyer.

Naming Your Business

If a business plans to use any name other than the owner's exact name, it must be registered under the *Business Names Act* with the Ministry of Consumer and Commercial Relations. In Ontario, an unincorporated business must renew its business name every five years. This may be done through a law office, the local Registry Office or at an *Ontario Business Connects* kiosk, found in selected shopping malls and some provincial government facilities.

If the owner wishes to conduct business, write cheques, bank, etc., in his or her own name, it is not necessary to register a business name. All net income then becomes personal income for tax purposes.

A business cannot be incorporated through Ontario Business Connects. This type of structure must be registered through the Companies Branch of the Ministry of Consumer and Commercial Relations. If incorporation seems to be a likely form of business organization, contact a chartered accountant and lawyer for further advice.



Certain tax regulations
are designed
specifically for
agriculture.

Taxes



Certain tax regulations are designed specifically for agriculture. Contact your accountant or the relevant tax authority for complete information. Hiring a tax professional with experience in agriculture is often a good practice. The federal, provincial and municipal governments administer taxes, and all have some impact on the rural property and rural business.

Farmland Property Tax Program, and Farm Business Registration Program

Your local municipality administers property tax. Before buying a property, it is wise to confirm that the property is assessed as farmland, and that there are no liens or

other financial claims against the property. Contact the municipality and the Assessment Branch of the Ministry of Finance.

All Ontario farm businesses with a gross farm income of \$7,000 or more must register annually in

OMAFRA's *Farm Business Registration Program* and pay an annual fee of \$150 to one of the accredited general farm organizations (currently the Ontario Federation of Agriculture and the Christian Farmers Federation of Ontario). This funding allows these organizations to represent the interests of farmers to the Governments of Ontario and Canada. Upon registering, the farm becomes eligible to be assessed at the Farm Property Tax rate.

Eligible farm businesses will be issued a *Farm Business Registration Number*, which must be used to claim eligibility for the *Farmland Property Tax Program*. Farm

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properties satisfying the eligibility requirements are identified as Class 6 farmland and taxed at 25 percent of the municipal residential tax rate. The farm residence and surrounding one acre of land are taxed as part of the residential class.

To be eligible for the Class 6 farmland property tax rate, the following criteria must be satisfied:

■ The property must be assessed as farmland (this is done through the Property Assessment Division of the Ministry of Finance)

■ The property must be part of a farming business generating over \$7,000 annually in gross farm income. In the first year of establishment of a farming business, or on successive years before income is generated, eligibility may be granted on the basis of reasonable projected estimates. This is especially important in the case of perennial crops such as orchards, grapevines, etc.

■ The farm business operator on the property (the owner or the tenant) must have a valid Farm Business Registration Number.

■ A Canadian citizen or a permanent resident of Canada must own the property. Where a partnership or corporation owns the property, Canadian citizens or permanent residents of Canada must own more than 50 percent of the shares.

The information collected on the current year's Farm Business Registration form and the Farmland Property Tax program forms will be used to determine eligibility for the following taxation year.

Managed Forest Tax Incentive Program

The Managed Forest Tax Incentive Program (MFTIP) aims to maintain or enhance healthy forests by providing forest management education to landowners. The MFTIP is delivered by the Ontario Forestry Association (OFA), the Ontario Woodlot Association (OWA) and the Ministry of Natural Resources (MNR).

To be eligible for the MFTIP, forest must cover at least 4 hectares (9.88 acres), excluding residences and open areas. Landowners who apply and qualify for the program will have their property reassessed and classified as Managed Forest (MF). The MF land will be compared to local farmland and have its Estimated Current Value determined based on its potential productivity. The change in Estimated Current Value will be shown on the Notice of Property Assessment. The MF land is then taxed at 25 percent of the municipal residential tax rate.

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Conservation Land Tax Incentive Program

The Conservation Land Tax Incentive Program (CLTIP) is designed to recognize, encourage and support the long-term protection of Ontario's significant conservation lands. Landowners who choose to take part in the CLTIP will be exempt from property taxes on lands that qualify.

Eligible conservation lands include provincially significant wetlands, provincially significant Areas of Natural and Scientific Interest (ANSI), areas designated as Escarpment Natural Area in the Niagara Escarpment Plan and the habitat of endangered species. The owners of conservation land must agree to maintain their property as conservation land and not carry out any activities that would have a negative impact on the natural heritage values of the site. The land must be at least one-fifth of a hectare (one-half acre) in size.

The Ministry of Municipal Affairs and Housing must receive applications for entry or continuation in the program by August 31 for the next taxation year. Landowners will be mailed a brochure and application.

Local offices of the Ministry of Natural Resources have maps of conservation lands for their respective districts and will advise landowners on identification and protection of these lands.

Income Tax

Farm businesses may use either the cash or the accrual method of calculating income. Under the cash method, only the cash received for products sold and cash spent on operating expenses is included in the tax statement.

Under the *accrual* method, changes in the inventory of livestock, feed and supplies, accounts payable and accounts receivable are adjusted at the end of the fiscal year. These changes are reflected in the Income Statement. Most farmers file taxes based on the cash method.

Purchases of buildings and equipment are not considered operating expenses. Capital Cost Allowance (CCA) may be claimed on buildings and machinery under both the cash basis and accrual method. The rate of CCA is outlined in the *Farmer's Income Tax Guide*, available at your local Revenue Canada office.

In a sole proprietorship, income or losses from farming must be combined with other sources of income to calculate taxable income. When farming is being combined with another source of income, it is important to ensure that the farm is registered as a business in order to deduct any losses from personal income. **Your accountant will help you determine whether a farm loss may be deducted against other income.**



Capital Gains Tax

Capital gain is the increase in value of a capital asset, such as a house or farmland. In Canada, the principal dwelling of every person is exempt from capital gains taxation. Most other capital assets are subject to Capital Gains Tax.

Land and production quotas are the major assets to incur capital gain on a farm. For properties owned before January 1, 1972, the capital gain is the difference between the sale price and the value on January 1, 1972. In addition, some adjustments can be made to either the January 1, 1972 value or the purchase price. For properties purchased after January 1, 1972, the capital gain is the difference between the sale price and the purchase price.

Seventy-five percent of a capital gain is subject to regular income tax. There are two exceptions:

- the principal residence of the owner and operator included in the farm property is exempted
- qualified farm property is eligible for a \$500,000 exemption

The 25 percent of a capital gain that is not subject to regular tax may still be subject to the Alternate Minimum Tax. Special provisions exist to postpone the payment of Capital Gains Tax when a farm is transferred to children. Professional tax advice is highly recommended.

Goods and Services Tax

The Goods and Services Tax (GST) is a 7 percent tax on the supply of most goods and services in Canada. GST registration is mandatory if you are providing taxable goods or services in Canada and your total (gross) worldwide taxable revenue exceeds \$30,000 over the previous four calendar quarters. Input tax credits can be claimed to recover the GST paid or owed on purchases and expenses used in your commercial farming activities.

You should register for GST before buying your farm property. This will allow you to claim any GST rebates owing to you from the purchase of the property. Your new farming business will also be ready to claim any exemptions and rebates from the very start.

When you register for GST with Revenue Canada, you will be assigned a reporting period for filing your GST. When you complete your return, you can claim a refund if the GST paid is greater than GST owed.

Examples of goods and services taxable at 7 percent include:

- sales of commercial real property and newly constructed residential real property
- rentals of commercial real property
- sales and leases of automobiles
- advertising
- legal and accounting fees

- cut flowers, trees and bedding plants
- some processed animal feeds (e.g., horse feed)

Examples of goods and services exempt from GST include:

- sales of agricultural products (e.g., wheat, grain, raw wool, unprocessed tobacco)
- sales of most farm livestock (the sale of horses within Canada is an exception)
- sales of most fishery products (e.g., fish for human consumption)
- exports

Revenue Canada will assign a Business Number (BN) to all new businesses registering for GST; payroll deductions and corporate income tax.

Ontario Retail Sales Tax

The Ontario Ministry of Finance administers the Ontario Retail Sales Tax (ORST). Ruling 14—*Persons Engaged in the Business of Farming* outlines the application of the tax. Most of the ordinary equipment and supplies used in farming are exempt from the Retail

Sales Tax; however, ORST is payable on items of tangible personal property such as cars, trucks and building materials. A rebate may be claimed on building materials

used for construction and repair of qualifying farm buildings. Dwellings are not included for this rebate.

Some items may be purchased exempt from tax provided that you use them for farming. The purchaser signs a *purchase-exempt certificate* or indicates on the invoice that the item will be used for farming.

Land Transfer Tax

Every individual or corporation obtaining land in Ontario is subject to Land Transfer Tax. The tax is based on the consideration of all lands, buildings, estates, and rights or interests in them, including options and long-term leases.

An exemption from Land Transfer Tax may be available when land is transferred from an individual to his or her family farm corporation or family business corporation. This is one contributing reason for incorporating the business before transferring it to the next generation. Retail Sales Tax may still be payable on any chattels such as cars and recreational vehicles that are transferred with the land.

Contact your local Ontario Retail Sales Tax office under Ministry of Finance in the Ontario Blue Pages of your telephone book for further details.

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Marketing Farm Products

Selling What You Grow

Farm products can be classified into three types: *commodities*, *produce* and *specialty products*.

Commodities are crops and livestock that are produced in relatively large quantities for general consumption and sold through common marketing channels. These commodities may be traded on *commodity exchanges*, such as the Chicago Board of Trade, and the prices based on large volume demand in domestic and export markets. Grains, oilseeds, hogs, market lambs and market cattle fall into this category.

Products that are in general use by the public and sold from the farm to high volume processors may also be classed as commodities. Milk, processing vegetables and fruit would fall into this category.

Produce is usually grown for more local markets or processors. It may be sold directly to consumers, wholesaled to the retail trade or distributors, or marketed through produce markets such as the *Ontario Food Terminal* in Toronto. Garden vegetables and fruit, culinary

herbs, and even some meats may at times fall into this category.

Specialty products are usually grown for a niche market, and sold directly to consumers, restaurants, distributors or specialty processors. Products such as venison, ginseng, oriental vegetables, medicinal herbs, ostriches, and specially prepared cuts of pork, beef and lamb cuts may fall into this category. There are very few defined markets for these products, so the grower must develop these market niches.

The divisions between these categories are not clearly defined, because a product may move between categories, depending on how it is prepared and marketed. If a farmer had pork custom processed, and re-tailed the cuts, the pork moves from a *commodity* to a *specialty product*. If the farmer sells cucumbers at a farm market or to a store, they are produce. If the farmer processes the cucumbers into pickles, they might be classified as a *specialty*. These are not legal descriptions or definitions, but merely an attempt to show that there are many ways to market farm products.

Marketing is a process of preparing one's goods or services to be sold to the public for their greatest value. This process is guided by the "four P's": *Product*, *Promotion*, *Price* and *Place*. The application of these four principles will determine how successful entrepreneurs will be in getting the best value for their products.

PRODUCT

How well the *product* is prepared, and whether it is, in fact, wanted or needed by the customers, is the most basic step in marketing. Understanding one's marketplace, and determining the need for a product is the subject of many books and home study courses. New entrepreneurs are advised to study and understand consumer demand before deciding to launch a new product.

PROMOTION

Promotion is the method of letting customers know about the product and presenting it in a way that will encourage them to buy and come back for more. Advertising is part of promotion, but packaging, store or stand display and customer service have an equally important role in marketing.

PRICE

It is believed that more businesses fail because of poor *pricing* policies than for any other reason. The goal of pricing is to get maximum return from the product. This means it should be priced for the most profitable combination of price per unit and number of units sold. Maximizing or minimizing either price or volume may not result in maximum profits.

Price is not related to *cost of production*. Knowing the cost of production is important so entrepreneurs know the *breakeven* point for their products. The price, on the other hand, is determined by what the competition is charging for equivalent products, and what consumers are willing to pay for the product. It must cover the cost of production and any other costs, and provide a profit.

PLACE

"Location, location, location" are said to be the three most important principles in selling. The selling location or *place* can determine how many customers and which customers see and buy the product. A fresh produce stand that is located "on the way home from work" will likely sell more produce than if it was located on a side road. But location alone will not get customers' attention. Having a "hook" to get them in the door, and a product, quality and price to bring them back, are the keys to making the location work.

There are many marketing principles, such as *targeting, positioning, market orientation, segmentation* and so on that are embodied within the four P's. Entrepreneurs who are interested in developing their marketing skills can access many books and study courses on the subject.

Direct Marketing

Farmers may choose to market all or part of their produce directly to the end user. Some common ways of doing this are through *roadside stands or stores, pick-your-own enterprises, farmers' markets, urban stores or direct ordering by consumers*. Some people *add value* to their produce by cleaning, sorting and displaying it in special ways, or even processing it and selling a new product.

If the right marketing skills are used, these can be very lucrative ways to sell produce. Fruit and vegetables, meats, honey, maple products, home baking, jams, and many other **homegrown** consumer products are often sold in **these ways**.

Marketing Boards

Some commodities and produce are governed by *marketing boards*. These organizations have been established by a majority vote of producers for the purpose of marketing their products more effectively. They are established under the authority of the *Ontario Farm Products Marketing Act*.

The *Ontario Farm Products Marketing Commission* (OFPMC) is an agency of the Ontario Ministry of Agriculture, Food and Rural Affairs that is accountable for the conduct and impact of the marketing boards. It has the authority and power to administer the provisions of the *Farm Products Marketing Act* and the *Milk Act* and to authorize or revoke the powers of the marketing boards. The OFPMC reports directly to the Minister of Agriculture, Food and Rural Affairs.

Approximately 60 percent of Ontario's gross farm cash receipts are derived from commodities or produce for which there is a marketing board. These boards have three basic objectives:

- to stabilize farm prices in keeping with costs of production
- to assure continuity of supply
- to stimulate more efficient marketing of the product or commodity they represent

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They are categorized by specific marketing functions and powers.

■ **Negotiating Boards** are authorized to negotiate terms and conditions of sale. The Vegetable Growers' Marketing Board and the Soybean Growers' Marketing Board fall into this category.

■ **Boards that establish price** analyze supply and demand forces to determine a fair and equitable price for the commodity they represent. The Apple Marketing Commission, the Asparagus Growers' Marketing Board, the Greenhouse Vegetable Producers' Marketing Board and the Ontario Wheat Producers' Marketing Board are examples.

■ **Supply Management Boards** allot quota, granting individual producers the right to produce and market given quantities of product. They were established in response to long periods of low prices for the commodities they represent. These quotas are similar to a franchise one might buy to establish a doughnut shop in a given location and for a stated market. Examples of supply management boards are Chicken Farmers of Ontario, the Egg Producers' Marketing Board, Turkey Growers' Marketing Board and Dairy Farmers of Ontario.

All marketing boards engage in promotion and marketing activities, and sponsor research activities on behalf of producers. They seek out new markets and, in many cases, negotiate prices and/or contracts between processors and individual farmers.

If a product is covered under the mandate of a supply management marketing board, it may be illegal for a producer to sell any, or more than a few, of these products directly to end users, depending on the type of board and the regulations it governs. For example, a farmer may keep up to 99 laying hens and sell "graded" eggs directly to consumers, but keeping any more than that, or selling "ungraded" eggs, is strictly forbidden by law. One may not raise meat chickens for private sale, or sell any meat chickens raised under production quotas directly to consumers, or to unqualified processors. Up to fifty turkeys may be raised and sold without market quota.

Under non-supply-management boards, such as pork, fruit and vegetables, grains and oilseeds, direct consumer sales are permitted.

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Crop Production



Soil and Climate Requirements

Climate and soil type are the dominant factors influencing the suitability of a crop for a given area. Rainfall is not normally a serious yield-limiting factor in Ontario, although adequate rainfall in July and August certainly helps to maximize yields.

Of course, water requirements for each crop are different. Crops planted in wider rows, or later in the growing season, may have a greater rainfall need than the grains, which are planted in the fall or early spring, and mature in mid-summer. This is because more of the soil surface is exposed to direct sunlight for a longer period, and there is more evaporation from the soil surface during this time.

Heavier soils (see "Soil Types," below) and soils high in organic matter content hold moisture better than light, sandy or gravelly soils, and need less rainfall during the growing season. Sandy or gravelly soils lose their moisture more quickly and reach higher soil temperatures. Irrigation is not practised on grain and oilseed crops, because the loss in value of the crop due to drought normally will not pay for the cost of irrigating.

The best insurance against drought for most farm crops is to plant as early in the season as the soil conditions and crop species will allow, and to promote as rapid growth as possible early in the season. The main risk factor in this practice is the danger of frost damage to seed-

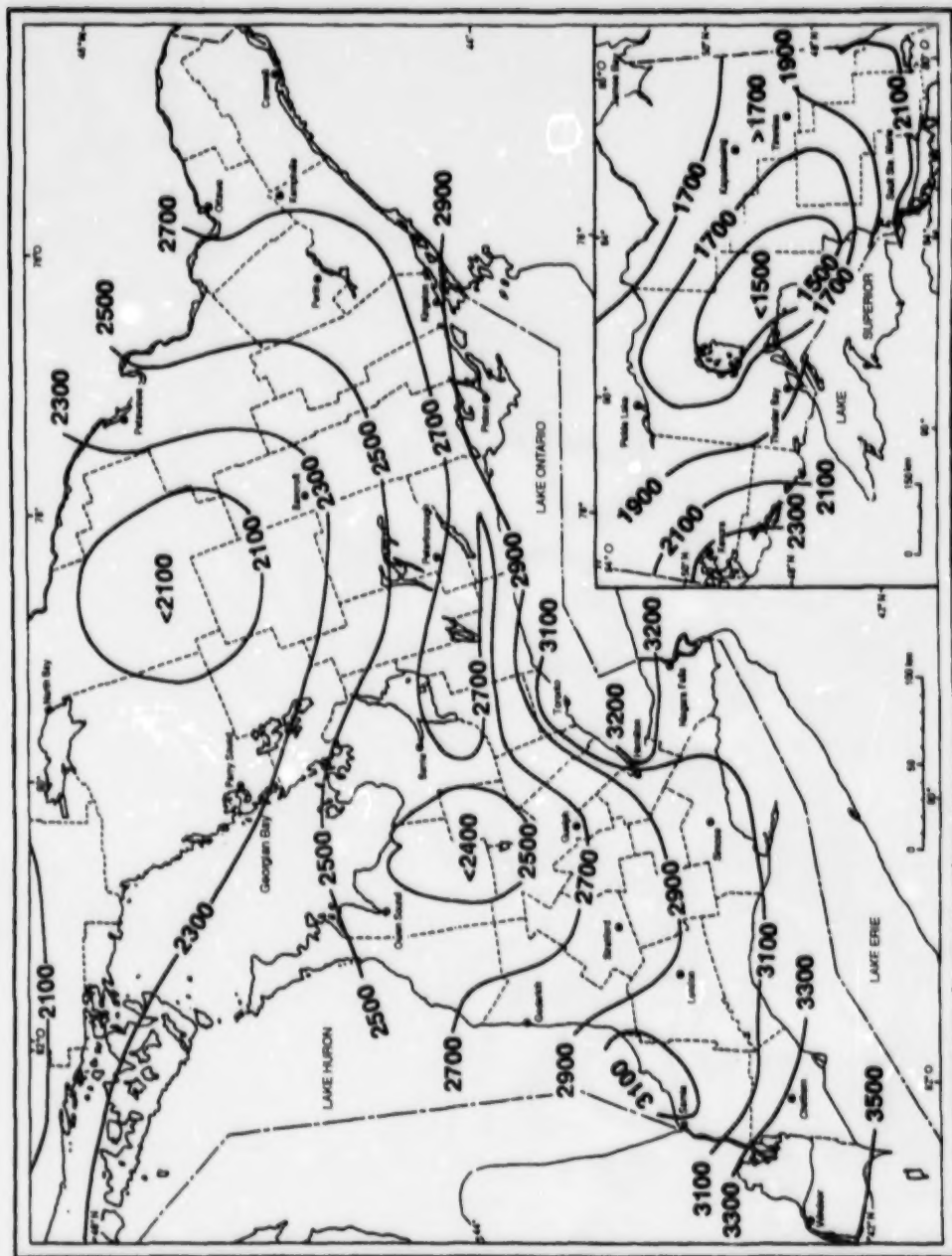
lings. The recommended planting dates for each species are a guide, but local history may indicate when it is safe to plant frost-sensitive crops. Use a soil thermometer to determine when the seedbed is conducive to rapid germination.

Selection of corn, soybean and white bean varieties is based on a heat-unit rating for specific areas of Ontario. Crops such as cereals and canola develop best with daytime temperatures in the range of 15°–24°C, while crops such as corn and soybeans develop most quickly in the 20°–32°C range. OMAFRA Publication 296: *Field Crop Recommendations*, gives recommendations for selection of varieties of crops and cultural practices for all the field crops normally planted in Ontario. Ordering information is available on the OMAFRA web site or in the *Reference* section on page 108.

Seed Selection

Agricultural seeds have been developed over the past decades to produce a predictable yield of grain or forage of a given quality. These crops may have specific disease resistance or they may be adapted to particular climate conditions. For example, some varieties of corn perform especially well in the warm counties of Essex and Kent, while others, bred for early maturity and cold tolerance, will perform well in the cooler Simcoe or Renfrew counties. The location of the farm on the heat unit

Figure 2. Crop Heat Units for Ontario



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map (page 45) is a good guide to corn or soybean varieties, and to whether warm weather crops such as tomatoes and peppers would be advisable.

Because many of these "improved" seeds are hybrids, or have been created by selecting characteristics of other varieties, they will perform well for one generation. The resulting plants and grain from hybrid seed will have the desired characteristics, but will not reproduce true to the variety. For this reason, growers should plant only seed purchased for this year's crop from a

Buying only certified or registered seed will guarantee purity of variety and germination rate under reasonable growing conditions.

reputable seed dealer. Buying only certified or registered seed will guarantee purity of variety and germination rate under reasonable growing conditions.

Performance trials for agricultural seed varieties are published every year and distributed through industry magazines, farm supply outlets and from the Government Information Centre (p. 108). OMAFRA Publication 296: *Field Crop Recommendations*, contains recommended varieties for most species.

Soil Types

SANDY SOILS are coarse and gritty and are often referred to as light soils. They are easy to work and can be tilled earlier in the spring than clays or loams, but the crops planted in them suffer more during drought. Because of the large soil particle size, these soils hold more air, and organic matter is oxidised and disappears more readily than in clay, silt or loam soils.

CLAY SOILS are fine-textured and are often referred to as heavy soils. These soils become very sticky when wet. The timing of tillage operations is very important with clay soils to avoid damaging the soil structure. Working these soils too early, or driving over them, will cause the soil particles to compact or smear. Germination will be slow and inconsistent, and plant growth will be stunted in a compacted soil. If clay soils that are low in organic matter are tilled when they are too wet, they may form hard clods that are difficult to break down.

Farmers on clay soils concentrate on building up organic matter, in combination with systematic tile drainage to improve the productivity of these soils.

LOAM AND SILT LOAM SOILS (between sandy and clay) are usually the easiest textures to manage, and suited to the widest variety of field crops. Because they contain a moderate level of clay, they will hold moisture and organic matter well. If not compacted, these soils will form excellent seedbeds and provide a good base for profitable crop production.

ORGANIC (MUCK) SOILS are located in low-lying areas on the farm. They are characterized by a high water table, and are black and composed almost entirely of partially decomposed plant material. To make these soils productive, they must be drained and managed to preserve the organic features.

Erosion by wind and water, and the loss of organic matter through oxidation are the most serious hazards facing organic soils. Keeping the ground covered with spring grains or oilseed radish, and allowing the water table to rise closer to the surface during non-cropping periods, will reduce the rate of deterioration of these soils. Water table control is achieved through a complex drainage system. When they are part of a larger field, muck soils may be more subject to frost damage and will have different pest and fertility problems than the rest of the field.

The proportions of sand, silt and clay in a soil determine soil *texture*. To determine the relative proportions of sand to clay in a mineral soil, a simple "worm test" can be applied. Roll a small ball of moist soil gently between your hands to form a "worm," like you did with modeling clay when you were a child. The longer the "worm" you can form, the higher the proportion of clay in the soil. If the worm leaves a fine grit in your hand, the soil likely contains a good proportion of silt or fine sand.

Soil *structure* is the result of the arrangement of these soil particles and the organic matter that holds them together. If a soil has a good *crumb structure*, the soil particles hold together loosely and crumble apart if pressed when dry. This structure will hold moisture well and form into a firm, fine seedbed with a minimum of tillage.

Good soil structure can be developed by the use of different crops in a planned rotation, and by leaving crop residue on top, or incorporating it into the top 3-4 in. of the soil. Leaving the crop residue on the ground, or planting a cover crop after harvesting, helps protect the land against erosion and loss of organic matter.

map (page 45) is a good guide to corn or soybean varieties, and to whether warm weather crops such as tomatoes and peppers would be advisable.

Because many of these "improved" seeds are hybrids, or have been created by selecting characteristics of other varieties, they will perform well for one generation. The resulting plants and grain from hybrid seed will have the desired characteristics, but will not reproduce true to the variety. For this reason, growers should plant only seed purchased for this year's crop from a

Buying only certified or registered seed will guarantee purity of variety and germination rate under reasonable growing conditions.

reputable seed dealer. Buying only *certified* or *registered* seed will guarantee purity of variety and germination rate under reasonable growing conditions.

Performance trials for agricultural seed varieties are published every year and distributed through industry magazines, farm supply outlets and from the Government Information Centre (p. 108). OMAFRA Publication 296: *Field Crop Recommendations*, contains recommended varieties for most species.

Soil Types

SANDY SOILS are coarse and gritty and are often referred to as light soils. They are easy to work and can be tilled earlier in the spring than clays or loams, but the crops planted in them suffer more during drought. Because of the large soil particle size, these soils hold more air, and organic matter is oxidized and disappears more readily than in clay, silt or loam soils.

CLAY SOILS are fine-textured and are often referred to as heavy soils. These soils become very sticky when wet. The timing of tillage operations is very important with clay soils to avoid damaging the soil structure. Working these soils too early, or driving over them, will cause the soil particles to compact or smear. Germination will be slow and inconsistent, and plant growth will be stunted in a compacted soil. If clay soils that are low in organic matter are tilled when they are too wet, they may form hard clods that are difficult to break down.

Farmers on clay soils concentrate on building up organic matter, in combination with systematic tile drainage to improve the productivity of these soils.

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Good soil structure can be developed by the use of different crops in a planned rotation, and by leaving crop residue on top, or incorporating it into the top 3-4 in. of the soil. Leaving the crop residue on the ground, or planting a *cover crop* after harvesting, helps protect the land against erosion and loss of organic matter.

Preparing for Planting

Tillage is any activity that disturbs the surface of the soil. It serves a number of purposes: loosening and aerating soil, incorporating crop residue, fertilizer and herbicides, controlling weeds by uprooting, and preparing a seedbed.

Primary Tillage

The moldboard plough has traditionally been used for primary seedbed preparation. The plough lifts and breaks the soil, incorporating crop residue, manure and fertilizer. Fall ploughing is easiest to manage for most fine-textured (clay, clay loam) soils. Spring ploughing is feasible on most coarse (sand, sand loam) and medium-textured (loam, silt) soils. Normal plough depth is 12–15 cm (4–6 in.); ploughing at depths greater than 20 cm will reduce yields and lead to increased soil erosion.

The chisel plough can also be used for primary tillage. It is particularly effective on erosion-prone coarse and medium-textured soils. The mulch tiller or "soil saver" is a variation on the chisel plow. Both of these are used in *minimum tillage* systems, by which farmers try to conserve moisture, mix organic matter into the top few inches of soil and, at the same time, reduce tillage costs.

Secondary Tillage

The main purpose of secondary tillage is to prepare the seedbed. The main purpose of secondary tillage is to level, pulverize and firm the soil before seeding. The timing and amount of secondary tillage required depends on the season, type of soil, soil moisture and the crop to be grown. Coarse and medium-textured soils seldom require more than one pass with a field cultivator or double disc harrow before seeding.

After seeding small-seeded crops like forages or canola, a smooth or corrugated roller may be used to firm the soil and to ensure better contact between seed and soil. The same result can be achieved by using a seed drill with packing wheels. Rolling or packing is losing favour because it compacts the soil and requires an extra pass with machinery.

Clay soils that are ploughed in the fall usually require two or three cultivations to prepare the seedbed in the spring. Cultivator teeth should not penetrate more than three or four inches to smooth the soil and leave the seedbed firm. In an Ontario climate, frost action prepares an almost perfect seedbed. Spring cultivation will allow the ground to warm up more quickly. The farmer's role is simply to level the ground and prepare a firm, uniform seedbed so that all seeds are planted at the same depth and have good seed-to-soil contact. Mother Nature will do the rest.

Spring-toothed harrows and cultivators are used to loosen a compacted surface. Avoid cultivating fine-textured soils when they are wet, because the soil structure will be damaged. Coarse sandy soils are not as susceptible to structural damage when tilled at improper soil moisture. Over-cultivation of any soil type increases fuel, equipment and labour costs, reduces organic matter and increases moisture loss from the soil. This results in lower yields and returns from crop production.

No-till Systems

The main purpose of tillage is to prepare a seedbed. The more operations this requires, and the more machines that are needed, the higher the cost of creating that ideal seedbed. As mentioned above, the more a soil surface is disturbed, the more likely it is that soil structure will be damaged and erosion will take place.

With low cost of production and soil conservation as their goals, progressive farmers and equipment companies have been designing equipment that will prepare a narrow seedbed, plant the seed, and often inject a small amount of plant food, called *starter fertilizer*, in close proximity to the seed, all in one operation. This is known as *no-till* or *zero-till* farming. More correctly, it should be called *zone tillage*, because the soil is worked in a narrow band or seed zone.

The success of no-till farming depends on the use of highly specialized planters, and skilled operators who understand the needs of the crop they are planting. The higher the proportion of clay in the soil being planted, the greater the need for the right machinery and the right conditions. Many innovative farmers are using a combination of *minimum tillage* (see *chisel plough*) and *no-till* to reduce costs and maximize production. Some farmers find that the use of the mulch tiller following corn, if soybeans are to be planted, results in a higher yield of beans. No-till may be used for the rest of the rotation.

Advantages of no-till include lower capital investment in machinery, reduced labour cost, improved soil structure and decreased soil erosion. These reduced production costs can be very significant on larger acreages. Although the cost of individual machines and fuel requirements are high, no-till requires fewer machines than conventional farming.

Disadvantages are the high cost of individual machines (especially for small enterprises), the high level of knowledge and skill required for success, and the possible lack of understanding by the operator of all of the production technology and science involved. Fertilizer application, weed control and manure disposal are extra challenges in no-till systems.

Soil Testing

A fertile soil supplies most of the essential nutrients required for plant growth. Soil testing, however, provides the best estimate of soil fertility and indicates which nutrients need to be added to meet the needs of the new crop. Fields should be tested at least once every three years. Sampling methods are critical, because a poor sample will result in an erroneous and misleading test. Sampling instructions, soil sample boxes and information sheets are available from the Government Information Centre (p. 108) and many farm supply outlets. Sampling tubes are often available, courtesy of the county Soil and Crop Improvement Association. Tubes can also be purchased at many farm supply stores. Accredited laboratories are listed in OMAFRA Publication 296, *Field Crop Recommendations*.

The OMAFRA-Accredited Soil Testing Program provides a reliable basis for making fertilizer recommendations. OMAFRA-accredited laboratories test soil samples for available phosphorus, potassium, magnesium and soil acidity (pH). Recommendations are made for the amount of these nutrients that should be added for economical production of the specified crop. Recommendations for nitrogen are based on the crop need only, because nitrogen levels fluctuate greatly in the soil in very short periods of time.

Major Crop Nutrients

- **Nitrogen** promotes plant growth, gives plants a deep green colour and increases protein content.
- **Phosphorus** stimulates early root development, promotes rapid and vigorous growth, is important for plant seed development and increases winter hardiness.
- **Potassium** promotes the buildup of starch, increases plant vigor and disease resistance, strengthens stalks, improves seed quality and increases winter hardiness of forage legumes.

These nutrients exist naturally in the mix of minerals and organic matter that make up what we know as soil. However, soils may not provide all of the nutrients that modern crop production requires, so nutrients are added through fertilizers, farm manure, unharvested plant materials or inorganic fertilizers.

Major nutrients are supplied, either as *fertilizer materials*, containing one or two of the nutrients, or as *complete mixed fertilizers*, containing two or all three of the nutrients. The amount of major nutrient in the fertilizer is listed on the bag as a three-part ratio. The first number listed is nitrogen (N), the second is phosphorus (P_2O_5) and the third is potassium (K_2O). A fertilizer listed as 5-20-10, for example, would contain 5 percent nitrogen, 20 percent phosphorus and 10 percent potassium.

The fertilizer material urea contains 46 percent nitrogen only, and is expressed as 46-0-0. Muriate of potash is 0-0-60, and diammonium phosphate is shown as 18-46-0. Today most fertilizers are blended and sold in bulk to be spread on the field prior to the final cultivation before planting. Blends can be mixed and applied to meet the exact specifications of the growing crop.

Trace minerals are nutrients that are required in very small amounts by the plant. These are nearly always in adequate supply in the soil, but may be deficient in an area for a specific crop. Adding trace minerals is expensive, and may result in toxic levels if applied where they are not needed or in excessive amounts. Always consult a Soil and Crop Advisor before adding trace minerals.

When properly applied, manure can reduce chemical fertilizer costs significantly.

Manure and Ploughdown Crops (Green Manure)

Applying livestock manure adds organic matter and plant nutrients to the soil and helps to maintain a desirable soil structure. Corn, canola and grass hay respond best to the high levels of nitrogen released by livestock manure. When properly applied, manure can reduce chemical fertilizer costs significantly.

Nitrogen evaporates into the air if manure is left uncovered on the soil sur-

face, and other nutrients may be washed downhill or into the drainage water. Because of this, manure should be incorporated into the soil as soon as possible after it is spread. For the same reason, manure should not be spread on frozen ground. Incorporation is done most effectively with a moldboard, chisel plough or disc harrow.

Liquid manure is best spread on worked ground and cultivated in as soon as possible. If it is spread on unworked soil, manure can, and likely will, find its way into the tile drainage system very quickly, contaminating the drainage outlet or waterway. If this happens, farmers may be charged as polluters under the *Fisheries Act* or the *Ontario Water Resources Act*.

Underseeding winter wheat with red clover in the spring is a common practice for reducing soil erosion, improving soil structure and adding nitrogen to the soil for the following crop. Usually corn, or another spring-seeded crop follows wheat, and the clover is ploughed down as a green manure crop at that time.

Cover crops are used routinely whenever "erodable" land is left without a crop, usually over the winter. The cover crop may be a grass, legume or grain, depending on the purpose of the cover crop and compatibility with the following crop. Rye is normally sown to cover recently harvested tobacco soils. Oilseed radish is sometimes planted to absorb excess nutrients from fertilizers or manure. Whatever the cover crop, it is important that it will germinate and grow rapidly, providing a complete cover to prevent both water and wind erosion.

Weed Control

Weeds are simply plants that are growing where they are not wanted, so any plant that interferes with normal crop production is a weed.

Unplanted land can rapidly become a serious source of weed infestation on adjacent cultivated land. While all weeds are a nuisance, most are easily controlled by cultivation or by the safe use of herbicides. OMAFRA Publication 75, *Guide to Weed Control* is a comprehensive guide to weed management for Ontario farmers. It is available through the Government Information Centre (p. 108) or the OMAFRA web site.

In Ontario, only farmers who have a pesticide permit can purchase most farm herbicides. To obtain a license, an applicator must successfully complete a Grower Pesticide Safety Course, designed by the Ministries of the Environment and Agriculture, Food and Rural Affairs. To apply for this course, contact the Ontario Pesticide Education Program, Ridgetown College, 1-800-652-8573.

Those weeds that pose a particular hazard to agriculture or human health are called *noxious weeds*. The Ontario *Weed Control Act* lists 23 noxious weeds. It states,

"Every person in possession of land shall destroy all noxious weeds thereon." Under the *Act*, where land is rented, the tenant is considered to be the person in possession. If the tenant refuses to destroy the noxious weeds, the owner is on the owner to do so. If both refuse, the municipality may destroy the weeds and charge the landowner the cost of so doing.

Table 5 Noxious Weeds*

Bull thistle	Goat's-beard	Poison ivy	Spurge, cypress
Canada thistle	Hemlock, poison	Proso millet (blackseeded)	Spurge, leafy
Common barberry	Johnson grass	Ragweed	Tuberous vetchling
Colt's-foot	Knapweed	Russian thistle	Wild carrot
Dodder spp.	Milkweed	Scotch Thistle	Yellow rocket
European buckthorn	Nodding thistle	Sow thistle	

*The Weeds Act



ntario's wide range of soils, climate and geography allow a great diversity of agricultural activities and crop production. From the deep, limestone-based soils of the Great Lakes Basin in southwestern Ontario, with its long warm, humid growing season and mild winters, to the shallower, acid lands of the granite-based Canadian Shield; the cold deep loams of the northern clay belts and the sparse pockets of short-season production between Lake Superior and the Manitoba border, Ontario farmers are growing crops for livestock feed and human consumption.

This diversity of crop production capability dictates the kinds of crops that are grown in any region of the province. Generally speaking, the warmth-loving corn, soybeans and soft winter wheat are dominant in the Great Lakes basin of southern Ontario, where summer temperatures and length of growing season approach those of the mid-western United States. In northern Ontario and the inland regions of central and eastern Ontario, the cool-loving grasses and spring grains predominate. Canola, originally bred for the cool prairies, is gaining

popularity as a cash crop in parts of Ontario that have less than 2600 Crop Heat Units.

Farm crops are grouped into three main classifications: *forages*, *grains* and *oilseeds*.

Forages

Forages are grasses, legumes and other crops where the whole plant material is grown as feed for horses and ruminant animals: e.g., cattle, sheep and goats. Forages may be harvested and stored in a high moisture state, as silage, or dry, as hay. These crops provide both the roughage feed materials to keep the digestive systems of horses and ruminant animals in good working order, and most of the nutrients and energy required for daily maintenance.

Most farmers grow a mixture of grasses and legumes to provide a balance of nutrients for the animals and restore nitrogen and structure to the soil. Legumes have the ability to take nitrogen gases from the air, and fix them as nitrates in nodules on their roots. These ni-



lakes become available to other plants for growth, and to soil microbes (*Microbia*, etc.) that digest the organic plant material into humus, improving the texture and water-holding capacity of the soils.

Alfalfa, hairy-foot trefoil, white clover and red clover are the most common forage legumes. Timothy, brome-grass and orchardgrass are the most common forage grasses. The species chosen, and the proportion of legumes to grasses used, depends on soil condition, compatibility of the species, method of harvest and the species of livestock to be fed. OMAFRA Publication 296: *Field Crop Recommendations* contains recommended mixtures for different situations.

Forages may be direct seeded or they may be seeded along with a companion spring cereal crop. Because forage seedlings are fragile, slow growing and love shade, it is easier to get a successful stand if they are seeded with a crop of oats or barley. After the grain crop is harvested in early August, the newly established forage crop proliferates rapidly, providing a dense ground cover for the winter season.

Seeding of forages takes place in April or May, or as early as the soil is workable. Seeding may be possible in early August under certain conditions. This might be done if a farmer wishes to harvest an early grain crop, such as wheat, and establish a hay crop to harvest the following June. August seeding takes great skill, excellent weed control and a bit of luck in getting good rainfall and warmth in August and September.

Most forage stands are kept for three to five years after seeding, or until they become low yielding. Some pasture species, if well managed, may last for ten to fifteen years without being renewed.

For feed harvested as hay or hay crop silage (haylage), forages are harvested one to three times over the season, usually during early June, July and August. Time of harvest is dictated by their stage of maturity. Grasses reach their peak nutrient content when the seed heads start to appear. Similarly, legumes are at their best just as the first flowers appear. At these stages, the farmer can harvest the greatest nutrient level per hectare of crop.

Ontario's pasture season extends from May to October. Long-term pasture productivity depends on selecting a seed mixture that is appropriate for the field's growing conditions and the livestock species being pastured. Establishing a good stand, properly fertilizing and managing grazing are equally important factors.

The goal of pasturing livestock is to get the most production from the stock. This is accomplished only if you get the most production from the grasses. The number of livestock must be matched to the productive capacity of the pasture, and the pasture kept growing at its fastest rate.

To do this, a rotational pattern is followed. Different fields may be used, or the field may be divided with electric fencing. The stock is given access to the pasture when it has 15-25cm of growth and rotated to another

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field when it is eaten down to about 10 cm. These pasture heights vary with the species and the type of livestock being grazed.

Once grasses form heads and set seed, the nutritional content drops rapidly and the plants stop growing. If uneaten grass is left on the pasture, it must be clipped back so the field will continue to re-grow uniformly. The clippings may be taken off as hay and fed through the winter months. This rotational pattern is continued throughout the season. Good cattle on well-managed pasture may be able to gain up to 160 kg or more each in a season (400 kg of gain per ha).

Novice farmers are well advised to join a local Soil and Crop Improvement Association to learn more about efficient and profitable crop production practices.

Grain Crops

Corn

Corn is one of Ontario's most important field crops. It is planted in the spring and is either harvested as whole-plant silage for livestock feed in September or as grain in October and November. Grain corn is used both as livestock feed and in the production of breakfast cereal, alcohol, sugar, starches and other by-products, whereas sweet corn is a sugar-based grain for human consumption.

Oats and Barley

Oats and barley are spring-planted grains used mainly for livestock feed. Some oats are grown on contract to cereal makers, which specify varieties and qualities. Straw from oats and barley is used for livestock bedding. In some areas of Ontario, oats and barley are planted together as "mixed grain" for livestock. As indicated in Table 5, this practice has no advantage in yield or feed quality over barley alone on well-drained soils. Under conditions of imperfect drainage, the oats may fill in on wetter areas where barley does not grow as well.

Wheat

Winter wheat is planted in Ontario between mid-September and late October and harvested in late July or early August. Three varieties of winter wheat are grown: soft white, soft red and hard red. Although a small amount is used for livestock feed, soft varieties are usually grown for pastry flour, and hard wheat for bread flour. Because of its value in the marketplace, and certain feeding characteristics, wheat is not used as livestock feed unless it is downgraded because of quality.

Spring wheat varieties are planted between mid-April and mid-May and harvested in August. Most spring wheat is the hard red type and is used mainly for making bread flour. It is grown only in the central, eastern and northern parts of the province where spring and early summer temperatures are cooler. Wheat straw is used as

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livestock bedding and for mulching in small fruit production.

Wheat is marketed through the Ontario Wheat Producers' Marketing Board (OWPMB). An OWPMB number must be obtained from the board before selling wheat to a licensed elevator or processor. Payment can be made in one of two ways: the crop can be forward-contracted for a cash settlement at time of delivery, or an initial payment can be made at time of delivery plus interim payments as the crop is sold. Local elevator operators or the Ontario Wheat Producers Marketing Board can explain details of these systems of selling.

Rye

Rye is grown in Ontario primarily as a cover crop by tobacco growers and as a rotational crop by potato growers. It is also used by the distilling industry and, to a small extent, for livestock feed. Rye is planted in the fall and either ploughed down as green manure in the spring or harvested as grain in July.

Oilseed Crops

Soybeans

Soybeans, Ontario's largest oilseed crop, are planted in May after the greatest frost danger is past, and harvested in September or October. While grown primarily for their

oil content, the meal by-product is an important protein supplement for livestock. Soybeans may also be heat treated or roasted and fed directly to livestock as a protein and energy supplement. Untreated beans may be fed in limited quantities to cattle. Soybeans are marketed through the Ontario Soybean Growers' Marketing Board

Canola

Canola is grown primarily for its oil content, with the meal by-product used as a protein supplement. Most canola is the spring type, seeded in May and harvested in August. A very limited acreage of winter canola is planted in late August and harvested the following July. Spring canola performs best in the cooler parts of southern Ontario or in northern Ontario.

White Beans and Coloured Beans

White and coloured beans are grown for human consumption. These crops are planted in early June and harvested in late August or September. Crop losses can be very high if the weather is unusually wet during the harvest period. White beans are marketed through the Ontario Bean Producers' Marketing Board. Coloured beans are usually grown under contract to a licensed dealer specializing in specific coloured bean species.

Table 6 Common Field Crops

CROP	TYPICAL SEEDING RATE		APPROX. PLANTING DATE	APPROX. HARVEST DATE	AVERAGE YIELD	
	LB/ACRE	KG/HA			LB/ACRE	KG/HA
Grain corn	16	18	May	Oct-Nov	5810	6510
Oats	85	95	late April - early May	August	2040	2280
Barley	120	135	late April - very early May	late July-August	2880	3220
Winter wheat	105	115	mid-Sept. - mid-Oct.	late July	3360	3760
Mixed grain	100	115	late April - early May	August	2520	2820
Soybeans	90	100	mid-May - early June	October	2180	2450
Canola	4.5	5	late April - early May	late July - early Aug.	1500	1700
Field beans	40	44	late May - early June	late Aug. - mid Sept.	1400	1540

Conversion: kg/ha = lb/ac X 1.12 lb/ac. = kg/ha X 0.89



Horticultural Crops and Enterprises

Greenhouses

Success in the greenhouse business requires a well-defined market, a good location, significant start-up and operating capital, a well-planned production system, people skills, and experience dealing with the "mechanical" necessities of the business. These include complex heating, lighting, ventilation and watering systems. Once the greenhouses have been built, heat and labour are the owners' biggest costs.

Most greenhouses are covered with two layers of plastic film, which is replaced every three years. Over time, this film deteriorates because of exposure to ultraviolet rays and weather factors. While this represents a significant cost to the owner, it is more cost-effective than glass.

The greenhouse, whether using hydroponics, soil or artificial growing medium, will require lots of water to keep the plants growing and to control root temperature.

It is recommended that several sources of clean water be available to ensure adequate supply. Dirt or excess minerals will clog spray or drip nozzles.

An emergency power source is highly recommended in order to supply heat, air and water during power failures. This should be of a size and type to accommodate the needs of the greenhouse, and perhaps the operator's home on the same property.

The main greenhouse vegetable crops are tomatoes, cucumbers, sweet peppers and lettuce. However, produce such as oriental vegetables, hot peppers and even strawberries are now being grown in greenhouses. Production is mostly sold to packers or the wholesale market for distribution through grocery stores and fruit and vegetable markets. Tomato and cucumber enterprises that are larger than 5,000 square feet in area must market through the Ontario Greenhouse Vegetable Marketing Board.

Greenhouse flowers include cut flowers, potted plants and bedding plants. These products are marketed either through the wholesale market (supermarket chains, garden centres and florists) or directly to the consumer.

On a small scale, greenhouse growers usually access consumer markets directly, growing all or any of the vegetable crops, some flowers, potted plants and bedding plants. Even on this scale, controlling pests and diseases, good greenhouse management, and sound marketing and economic practices are essential for success.

Market Gardening

Weed and pest control are the downfall of many new gardeners.

Growing fruit and vegetables for the fresh produce market is appropriate for small acreages with part-time farmers. Land requirements for this type of enterprise can range from part of an acre to hundreds of acres. Factors like the type of marketplace, knowledge of the operator, availability of capital, equipment and irrigation water will determine the size and type of enterprise to be established.

Weed and pest control are the downfall of many new gardeners. Bugs and weeds are relentless, and the better the growing conditions, the more fierce the com-

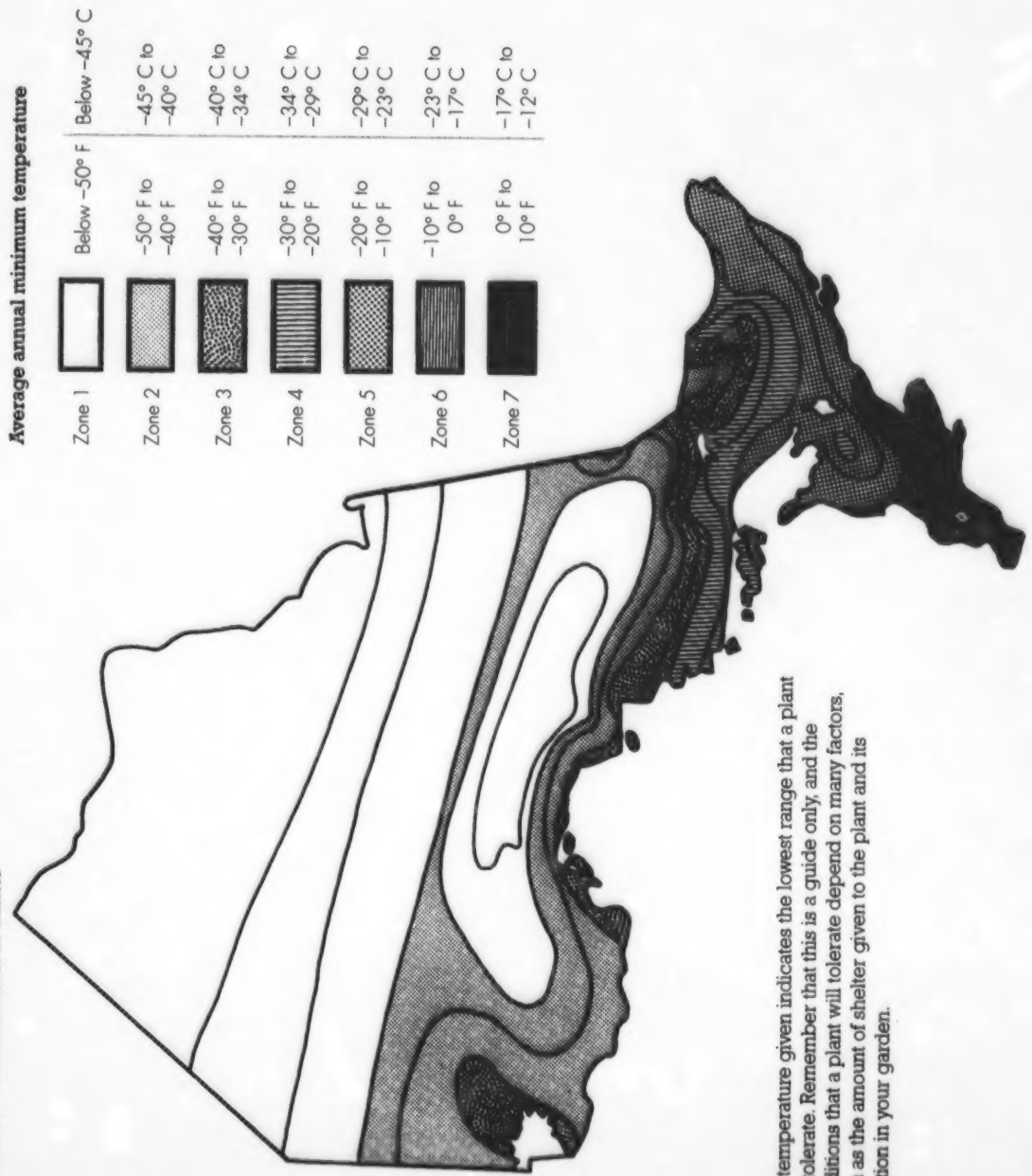
petition from these pests. Learning to control them will result in higher yields and better quality fruit.

There are many crop- and pest-management programs and publications offered by government and private industry. Integrated Pest Management (IPM) is a process by which growers systematically check their fields for crop pests and apply a planned system of prevention and control for these pests. Information and manuals for some specific crops are available from the Government Information Centre and the OMAFRA web site (p. 108).

Minimum winter temperatures restrict the growing of tree fruits and edible nuts to certain areas of Southern Ontario. Some produce species, such as cole crops (cabbages, broccoli, cauliflower and Brussels sprouts) perform better in cooler climates, or late in the season. Tree fruits perform best in areas near Lakes Erie and Ontario, and in a small microclimate near Georgian Bay where apples and pears do well. Nut trees are farmed on a small scale in the Carolinian Forest area from the Niagara peninsula to Grand Bend or Goderich on Lake Huron. Knowing the hardiness characteristics of the various species is important if a good supply of quality produce is to be offered consistently from year to year.

North America is divided into Plant Hardiness Zones according to the minimum normal temperatures in each area. Figure 3 shows the plant hardiness zones for Ontario.

Figure 3: Plant Hardiness Zones in Ontario



The temperature given indicates the lowest range that a plant will tolerate. Remember that this is a guide only, and the conditions that a plant will tolerate depend on many factors, such as the amount of shelter given to the plant and its position in your garden.

Drainage, climate and the nature of the marketplace are very important items to consider when choosing varieties and species to grow. For the small market garden that is selling direct to consumers, marketing principles are at least as important as production skill. Selecting and growing produce species that will result in

greatest sales, and using growing and marketing techniques that will attract and bring back customers are absolutely essential to the growth and success of the market garden. In market gardening, the opportunity for success or failure is highly dependent upon the marketing skill of the grower.

Table 7 Common Market Garden Crops

CROP	TYPICAL PLANTING RATE PER ACRE		SEED OR TRANSPLANT	YEARS TO FULL PRODUCTION	AVERAGE YIELD PER ACRE	ANNUAL LABOUR HRS. PER ACRE		SOIL REQUIRED
	PLANTING RATE PER ACRE	SEED OR TRANSPLANT						
Strawberry	7000 plants	transplant	3	6000 quarts	506 (commercial) 143 (PYO)	well drained, high in organic matter and fertility		
Raspberry	2200 plants	transplant	3	2700 pints	627 (commercial) 212 (PYO)	deep, well-drained, high in organic matter		
Highbush blueberry	800-1360 plants	transplant	4 years to first crop, 9 years to full yield	3700-5000 lbs or 6000-8000 pints	59	acidic, well-drained, high in organic matter		
Fresh market sweet corn	4.5-7 kg/acre	seed	Annual	800-1000 dozen	51	well-drained		
Squash/pumpkin	1.5-1.8 kg/acre	seed or transplant	Annual	1000 pumpkins	20	well-drained		
Fresh market tomato	9000 plants	transplant	Annual	3000 4-litre baskets	264	well-drained		
Fresh market sweet pepper	9000 plants	transplant	Annual	550 bushels	75	well-drained		
Christmas trees	800-1500 trees	transplant	7-12 years	500-960 trees	110	well-drained		

Scheduled Planting

Planting can be scheduled so that harvest is spread out over the season and available at specific times. Twelve thousand cobs of corn all ready to harvest within a five-day period is a lot of corn to pick and sell! Using different varieties, different planting dates, or a combination of the two will extend the selling season. With tomatoes, for example, you may plant different varieties at the same time. With sweet corn, you may use a combination of early-season and later-season corn and different planting dates to assure marketable corn at all times from mid-July to Thanksgiving.



Irrigation

Irrigation is critical when growing fruits and vegetables—an adequate source of water close to the planting site is essential. If irrigation water is limited, a *trickle* or *drip* irrigation system might be useful. An investment in plastic pipe will result in greater water efficiency. You may need to consult an irrigation systems company or an OMAFRA Fruit and Vegetable Specialist for advice and design of your system.

A Permit to Take Water is required from the Ontario Ministry of Environment (OME) if more than 50,000 litres

per day is to be used for irrigation purposes. This permit applies whether the water source is a lake, stream, river or private pond. There are very few exceptions to this regulation. Contact your nearest OME office, which is listed in the Ontario Blue Pages of the telephone directory.

Labour for Market Gardening

Consider the availability of reliable or experienced labour at harvest and planting times when determining the mix of crops to grow. Some fruits and vegetables are more labour intensive than others. How much are you willing to do yourself? Will you need to rely on hired labour for some operations?

Even pick-your-own enterprises require labour to erect signs and directional ropes, measure the pick, collect fees, weed patches and monitor the pickers. Proper training, supervision and rewarding of the labour force will pay off in fewer labour problems and more satisfied customers.

Good marketing means good customer service. Your most congenial employees should have the most contact with customers. How they meet and serve people may determine the farm marketer's success or failure, so training and monitoring your employees is simply good business.

Regular field monitoring plays an important role in market gardening. To ensure good pest and disease con-

trol, managers watch the development of their gardens daily, and take actions to correct any problems that develop. This action includes noting the optimum time to harvest each individual crop or row so it can be sold at the peak of quality.

Storage

The secret of *fresh is cold*! Chilling a product reduces the rate of ripening, holding the flavour and tenderness longer. These are the qualities your customers want most. Elaborate cold storage units are expensive to build and to operate, but small homemade units can be quite within the range of the inventive market gardener. The used cargo box from a refrigerator van, outfitted with a manual or timed sprinkler unit and appropriate drainage, can be quite serviceable for the smaller market gardener.

Marketing Your Produce

The production and business factors influencing your enterprise depend on your market. Fresh market (retail or wholesale), pick your own (PYO), and processing all have different requirements. Whether you are selling to a wholesaler, providing direct store delivery, selling from a roadside stand or running a pick-your-own business, a consistent supply of quality product delivered on time is essential to maintaining your markets.

When planning a market garden, be sure to consider what, where and how the product will be sold, who and what the competition will be, which factors bring the

Effective advertising will attract customers out of curiosity the first time. Quality and service will bring them back.

customers in, and the suitability of the location. It's a good idea for the novice market gardener to visit some successful on-farm markets and PYO businesses, to observe facilities that work, and marketing practices that attract and keep customers.

Roadside stands and PYO enterprises provide an opportunity for higher-than-wholesale earnings. A good marketer can earn a reputation for quality produce, and customers are more than willing to pay more for good value. Cost savings can be made on labour, containers, storage, packaging, commissions and transportation through direct selling.

Effective advertising will attract customers out of curiosity the first time. Quality and service will bring them back. Don't forget, though, that buildings, parking areas and even washrooms will help make your place of business a pleasant shopping experience.

Regulations are in effect regarding signage, roadside parking and entrances to the place of business. The governing body that is responsible for the roadway administers these regulations. If you are on a provincial highway, you will need to clear your plans with the Ontario Ministry of Transportation. Otherwise, check with your municipality or regional government.

Every business manager also deals directly with customers. PYO customers often look for a family outing as well as fresh, top-quality food. In contrast, wholesale distributors provide an opportunity to move a large quantity of product quickly. They provide most of the marketing services required, in exchange for a share of the revenue.

Organic Production

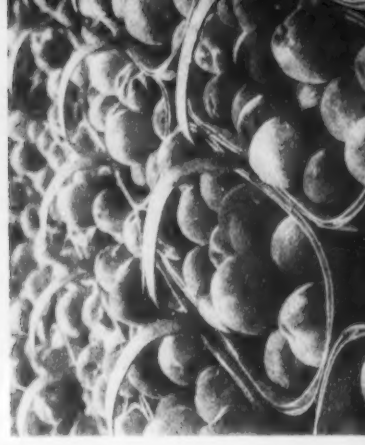
Organic farming is a holistic production system whose primary goal is to optimize the health and productivity of inter-dependent communities of soil life, plants, animals and people. It promotes the use of crop rotations and cover crops, and encourages balanced host/predator relationships.

While the use of chemical pesticides and fertilizers are not permitted for produce to be certified "organic", certain "natural" or non-synthetic pesticides may be allowed by the certifying organization if these products are registered for the specific use. Soil organic matter is maintained by the addition of compost, plant residues and cover crops. However, the compost must be produced on the certified premises. If not, it must be approved by the certifying organization. Use of off-farm manure is discouraged, and all "non-organic" sources must be composted for at least six months before use.

In the case of livestock, all grains, forages and protein supplements must be organically grown. The length of time that an animal must be on feed varies with the species, but is generally considered to be at least 12 months or the lifetime of the animal.

To qualify as organic, the farm or production unit must be "certified organic" by one of the certification organizations practising in Ontario. These agencies issue "organic certification standards" that conform to the proposed Organic Standards of Canada, developed by the Canadian Organic Advisory Board. These standards outline acceptable processes for production, processing, labelling and retailing organic foods in Canada.

While no provincial or federal law dictates the processes or standards that must be followed, any product that is advertised as "organic," or any variation of the word, must have been produced and handled in accordance with the certification requirements of one of the certification bodies. To do otherwise is considered misleading and deceptive under the *Food and Drugs Act* and the *Consumer Packaging and Labelling Act*.



In general, "certified organic" premises must have been farmed using organic techniques for a period of at least three years. During that time, no synthetically compounded mineral fertilizers or pesticides, growth regulators, antibiotics, hormones, genetic manipulation, ionizing radiation, colouring or other artificial additives may have been used.

The term "natural" as defined by the above acts, means that the food "contains no added food additives, flavourings, nutrients, incidental additives or contaminants." It is not synonymous with organic, and should not be used as such.

Organic food production is an attempt to ensure that no unnatural or chemical residues exist in the food, and presumes that the food is "safer" than food produced under normal commercial conditions. This premise opens the door for niche markets to those consumers who wish to avoid the chance of ingesting residues in their food.

Producers who wish to develop organic food enterprises should join one of the organic certifying organizations before proceeding. Producers must learn a great deal about controlling weeds, diseases and pests by natural methods, and about the marketplaces for organic foods.

Nursery and Landscape Plants

Growing ornamental trees and shrubs appeals to many rural landowners. On the surface, it seems like planting small trees and shrubs, allowing them to grow, and selling them at a higher price would be an easy way to make a living. Of course, it's not quite that simple.

Like every new enterprise, entrepreneurs must consider to whom they are going to sell these plants. Will this enterprise supply garden centres or sell directly to the consumer? If the former, what conditions does it take to become a supplier? If the latter, why will customers buy from the farm, rather than from an existing nursery?

People shopping at a nursery may like to look at a variety of options, including evergreen and deciduous trees, shrubs, perennial and annual flowers. The trip to the nursery is a shopping experience, not simply a purchasing trip. What does this new business offer as a competitive advantage over the existing nursery?

Access to

irrigation water is essential for nursery production.

The nursery farm should be located in a hardness zone that is compatible with the plants to be grown, and on land with an acidity (pH) that is between 6.0 and 7.5. This will ensure that most plants can thrive under local conditions. Those species that have a requirement for very acid soils can be purchased for resale from wholesale nurseries. Beginning nursery managers may be wise not to push the limits of plant hardness range or pH too hard, until they gain experience with the plants.

Level, sandy loam soil that has good drainage and is free of wet pockets is ideal for nursery production. This type of land facilitates rapid growth and easy digging of plants. Level ground is less subject to water erosion as well, although wind erosion is still a threat. Many growers plant windbreaks around the fields to reduce wind speed.

Access to irrigation water is essential for nursery production. There are several types of irrigation systems available to growers. An irrigation consultant can help to plan the system. *A Permit to Take Water*, as discussed previously, may be necessary.

An Integrated Pest Management (IPM) program, which includes regular monitoring of fields for weed, disease and pest problems, is necessary for producing quality nursery plants.

Container production of nursery stock is increasing in popularity in the nursery trade. This practice eliminates digging and root balling, and creates a compact root system that survives transplanting more readily. Facilities for mixing and handling potting media ingredients are a necessary part of this enterprise. Container growing involves some technologies that are different from field growing, so new entrepreneurs must learn about the special circumstances, equipment and labour requirements while planning the enterprise, rather than after the commitment has been made.

The Niagara Parks Commission School of Horticulture, Humber College and the University of Guelph offer practical courses in plant production and maintenance. Home study courses in nursery production, business development and marketing are also available.



A livestock enterprise usually begins as a part-time business, selling excess animals, and then "graduates" to full time as production intensity and markets develop.

Livestock Enterprises

In addition to choosing the type of livestock they wish to raise, beginning livestock farmers have three choices for each type and intensity of enterprise they wish to engage in. They may choose commercial production, raising show or breeding stock, or simply raising livestock as a hobby, mainly for their own use and enjoyment.

Even hobbies sometimes turn into commercial ventures. A livestock enterprise usually begins as a part-time business, selling excess animals, and then "graduates" to full time as production intensity and markets develop. Showing livestock at fairs and exhibitions may start as a hobby, but is often practised by producers of purebred livestock as a means of advertising their stock.

Livestock shows are a good place for the novice farmer to become acquainted with the various breeds of livestock, but may not be helpful in understanding commercial production techniques. For this, the new farmer should visit demonstration farms and open houses, commercial trade shows and real commercial farms. Always phone ahead before visiting a farm to ensure that you are welcome and not interfering with normal operations.

Many commercial livestock farms, especially poultry, pork and dairy, do not welcome visitors because of possible disease transmission on clothing. Some may require visitors to wear special clothing and boots, or even to shower before entering facilities. This is a precaution taken by every visitor, consultant and worker on these farms, so visitors should not take offence if asked to do so.



Breeding Livestock

Each species of livestock has its own reproductive characteristics. Within species, some breeds have adapted differently over time, becoming more prolific than others. Modern livestock managers have learned ways to take advantage of these breed and species characteristics for profit.

Table 8 shows the general pattern of heat periods (estrus) for the main livestock species, and the length of gestation period for each.

Table 8 Estrus Periods and Gestation of Farm Animals*

SPECIES	ESTRUS FREQUENCY	TIME OF ESTRUS	GESTATION PERIOD
Cattle	18-24 days	all year	279-290 days
Sheep	14-19 days	late summer or fall	144-151 days
Goats	20-22 days	late summer or fall	147-153 days
Swine	20-22 days	all year	112-116 days
Horses	21-22 days	May-July	330-345 days

*Merck Veterinary Journal, 3rd Edition

Feeding Livestock

Feeding livestock is a scientific and complicated process. Thousands of Ph.D. theses and research projects are devoted to untangling the mysteries of animal nutrition. But if one understands a few basic principles, practical feeding practices become much clearer.

Most animals are classed into two types based on the physiology of their digestive systems: *ruminants* and *single-stomached* animals or *non-ruminants*. Ruminants have a four-compartment stomach, the largest of which is called the *rumen*. This type of stomach is adapted to digesting large amounts of fibrous feeds, known as *roughages*. These animals include cows, sheep and goats. Their basic diet includes grasses and clovers, supplemented with grains during periods when they need more energy and oilseed meals when they need more protein. Vitamins and minerals are added to maintain health.

Single-stomached animals, like pigs, do not have the capacity to digest large amounts of fibre. Their diet consists of high-energy grains, balanced with oilseed meals to meet their protein needs. Minerals and vitamins are added for structural soundness and health maintenance.

Proteins are the building blocks of muscle tissue, and the daily requirement for protein increases during periods of rapid growth or reproduction. This require-

ment decreases as animals mature and when market animals are approaching market weight.

The proteins of each plant are different, and the type of protein needed by each species of single-stomached animal and poultry is different from each other, so consult a nutrition advisor before deciding which protein supplements to use.

In addition to protein, animals require more energy, vitamins and minerals as young animals, and during the last one-third of pregnancy, when the fetuses are developing rapidly. During these times, grains and supplements are increased.

Mature animals that have finished their growing stage require less energy as well. This need may be achieved by reducing the total intake of feed, especially of grains and oilseeds, or by changing the proportion of high-energy and low-energy feeds in the ration. Excess energy is stored as fat, especially during times when growth weight or work (energy output) is reduced.

The digestive system of horses is different from that of other single-stomached animals. Their need for a high-fibre diet comes about as a result of a highly developed large intestine, or *colon*, rather than the stomach. Their diet is more closely related to that of a ruminant than a pig.

All classes of livestock need clean water at all times. Water is perhaps the most important factor for maintaining good health status of the animals. Check water at least daily to ensure it has not become fouled.

For ruminants, vitamins, minerals and salt are provided free choice at all times. These may be in the form of blocks, called *licks*, for ruminant animals, or as granular mixes, and are usually placed near the water sources. Additional salt, minerals and vitamins may be added to

the grain mix if this is being fed. For swine and poultry, salt, mineral and vitamins are always added to the feed mix.

With this basic understanding, new livestock feeders should maintain a close relationship with a livestock advisor and feed company representative, in order to formulate a complete feeding program for their particular type of livestock.

Water is perhaps the most important factor for maintaining good health status of the animals.

Dairy

Producing milk requires a very high level of capital investment and management skills. Dairy cattle nutrition and management is a very precise mix of science and art. The inability to provide this skill will result in unhealthy animals and unsaleable milk. Milking and other daily chores must be completed on a very regular schedule, in order to maintain the health of the milking herd, and the production level needed for economical performance. Because of these factors, dairy is rarely a viable part-time enterprise.

Farm management records of dairy businesses suggest that skilled dairy farmers need at least 60 percent equity if they are to have reasonable expectation of financial success with a dairy farm.

Dairy farmers must purchase the right to ship milk, i.e., a dairy quota, from the Dairy Farmers of Ontario (DFO) before any milk may be sold. The cost of purchasing this quota will be a major factor when considering a

dairy enterprise. Entrepreneurs who are seriously considering entering the dairy business should contact their local DFO field person through the Dairy Farmers of Ontario.

Dairy Breeds

Holstein cattle make up a vast majority of dairy cattle in Ontario. They are large cattle known for their ability to produce large quantities of milk. On average, Holstein milk contains about 4 percent butterfat.

Jersey cattle are tan, brown or brown and white cattle, considerably smaller in stature than Holstein. They produce less milk, which may contain up to 6 percent butterfat or even more. Recent advances in breeding have greatly increased both the size and production of Jersey cattle.

Ayrshire, Guernsey and Brown Swiss cattle make up the balance of dairy breeds in Ontario. These are declining in numbers as the total number of farms declines and the productive ability of the main two breeds improves.

Beef Cattle

Beef farming is divided into three enterprise types: *cow-calf*, *growing* and *finishing*. Cow-calf is the breeding, birthing (calving) and growing of calves to weaning age. The growing enterprise takes the calves to the next size



level, ready to be fed for market, and finishing is the final stage of preparation for market as beef.

Another type of beef farming enterprise is production of purebred or crossbred breeding stock that will be used in commercial herds. It is not recommended that novices enter this type of business until they gain a great deal of experience through contact with this segment of the beef industry.

Beef Breeds

Beef producers have a choice of traditional breeds of British origin—Shorthorn, Aberdeen-Angus and Hereford—and the leaner, faster-growing European breeds—Charolais, Simmental, Limousin, Maine-Anjou, Blonde d'Aquitaine, Salers and Gelbvieh.

The British breeds are known for their ease of management, ability to make good gains on low-cost forages, good marbling characteristics and excellent flavour of their meat. The European breeds are renowned for rapid growth, good muscle development and leanness. Commercial herd managers usually crossbreed the European breeds with the British breeds, aiming to gain the maximum advantage from each. The crossbred calves will grow faster and more efficiently than the average of their parents, due to a genetic phenomenon known as *heterosis*, or hybrid vigour. Because of this, they normally bring higher prices at the sales yard.

Cow-Calf

The goal of the cow-calf operator is to provide a large, healthy calf at as low a cost as possible at weaning time. Doing this means selecting strong, good-milking cows that calve easily without human assistance, and breeding them to the type of beef bulls that will give the kind of calves that are most desired by the finishers.

For commercial production, this generally means cross-breeding the cows to bulls of a different breed. Calves are usually sold after weaning at six to seven months (200–300 kg) or as yearlings (300–400 kg). A good set of cattle scales and a facility for easy sorting and handling are basic tools for good production and business management on a beef farm.

Deciding which breeds to cross is a matter of knowing the market. Feedlot managers want large-framed calves that are lean and muscular and will be ready for market at 450–600 kg. To reach this goal, the commercial cow-calf owner will establish a herd of cows that milk well and are good mothers, and a herd sire that leaves good growth and carcass qualities. One example would be Hereford-Simmental crossbred cows, bred to a Red Aberdeen Angus bull. This cross will yield a growthy, reddish-coloured calf with good carcass qualities. In this example, the colour makes no difference to the meat quality, but may be more popular with buyers. Other breeds can be used successfully as well.

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Toward the end of the weaning period, calves are usually introduced to a small amount of grain-based feed in an area where their mothers can't go. This is called a creep. The purpose of creep feeding is to start the calves eating solid feed before they are weaned, reducing the shock of weaning. It has the additional benefit of producing bigger, stronger calves at sale time, and preparing the calf for full feeding in the feedlot.

When sending calves to market, there are four key points to remember:

- 1. The main factors that determine price are frame size, cross-bred, body condition and health of the calves. These are indications of the ability of the calf to grow quickly and efficiently.**
- 2. Castration and dehorning are necessary. These operations can be performed at a young age and, if done humanely, cause a minimum of discomfort to the young animal. Consult a local veterinarian for advice and training in these procedures.**
- 3. Uniformity of size and type pays dividends when selling the calves. For example, keeping all Hereford-Charolais calves that weigh 200-225 kg in one group, and Angus-**

Simmental calves that weigh 225-250 kg in another will result in higher prices than if all of the calves are sold as one lot. Similarly, steers (castrated males) and heifers should be sold in separate lots.

- 4. Marketing strategies should be planned early, and the sale groups mixed several days ahead of the sale. The pre-mixed calves will be more content with their "peers" and will be quieter for the buyers.**

The cow-calf producer's returns tend to be cyclical, driven by supply and demand. These cycles are influenced by the price of finished cattle, prices of other meats, price and supply of feed grains, and production in other parts of the world. Consumer trends also have a bearing on the wholesale or farm-gate price.

The need to keep costs low, and the ability of beef animals to convert cheap, roughage feeds into muscle, means that cow-calf enterprises will normally be found where grass grows abundantly, land costs are low and higher-priced crops such as corn and soybeans are not practical. Cow-calf enterprises can often be made to work in areas where topography, stoniness, poor drainage or cool growing-season temperatures limit more intensive crop production.

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Because the returns per calf are not normally high, large numbers of cows are necessary for a cow-calf enterprise to be viable as a full-time business. Thus, smaller numbers can be easily adapted to a part-time venture for beginning or part-time farmers. One herd sire can breed 25 to 40 cows, or twice that number if cows are grouped into "spring" and "fall" calving groups, so this should be considered to be an effective "unit" size. Multiples of these units can then make up an economical enterprise or business. For natural breeding, managers of larger herds should consider a second (or more) herd sire. If smaller numbers, a farmer should consider artificial insemination of the herd. Consult a local veterinarian or breeding technician.

Table 9 Cow-Calf Performance Targets

- 90% calf crop; i.e., wean at least nine calves from every ten cows
- 95% unassisted calving
- weaning weights of 250 kg or more for steers at 200 days of age
- weaning weight of 227 kg or more for heifers at 200 days of age
- seven calves per cow by the time the cow is eight years old

Feedlot

A feedlot operator buys calves or yearlings weighing 200–400 kg. These cattle are fed until they reach market weights of 450–600 kg. This operation is sometimes broken into two parts, with one farmer growing the cattle on hay or grass for about half of the total gain (an intermediate stage known as *backgrounding*), and selling to a finisher for the final stage.

With current low margins in the beef industry, it may be difficult to justify this extra enterprise. Some farmers use creep feeding as a means of preparing calves to go onto a full feeding regimen and put calves directly into the feedlot at weaning time.

Successful feedlot management requires knowledge of the cattle markets and the ability to purchase replacement cattle in competition with experienced buyers. The art of knowing when and where to sell finished animals comes with experience.

Narrow profit margins leave little room for poor management. Profits can quickly disappear with high death losses, veterinarian and medication costs, and poor growth rates. Buying healthy, growthy calves, giving them lots of room and ventilation,

Buying healthy, growthy calves, giving them lots of room and ventilation, and avoiding high-energy rations will help to avoid health problems.

and avoiding high-energy rations will help to avoid health problems. An OMAFRA livestock advisor and a reputable feed company service representative can provide advice.

Table 10 Feedlot Performance Targets

- average daily gain of 1.0 kg per day or more (depending on cost and level of grain feeding, health and growth potential of cattle)
- death losses less than 1% if replacement cattle weigh 275 kg or more
- death losses under 2% if replacement cattle weigh 160–275 kg

Birth-to-Market

In market livestock, producing gain at a cost that is lower than the market price results in profit. Some cow herd owners have learned to capture extra profits by growing their own calves to market weight. This is feasible where a cow-calf farmer has some high-energy grains, such as corn or barley, to form the basis of a finishing ration.

This practice lends itself very well to adding value through direct consumer sales, if the owner can develop a market, and is close to a major urban centre.

Veal Production

To produce veal, newborn calves, usually bulls of dairy breeding, are fed a ration designed to finish animals at a light weight, thus providing lean, tender meat. The calves are raised as either *red* veal or *white* veal, although there are no such "official" designations. To be eligible for grading as veal at federally inspected packing plants, veal carcasses must weigh between 90 and 205 kg (198–451 lbs). These calves would weigh between 155 and 355 kg at the time of shipping.

White veal calves are fed milk replacer and special veal feeds with no roughages. This ensures that the meat will be very pale in colour. They are marketed at a live weight of 200–240 kg.

Red veal is the more commonly raised type of veal. It is based on a high proportion of grain being fed to produce a rapid growth rate. Just enough hay or other roughage feed is allowed to maintain the digestive system. These calves are fed to reach a finished weight of 225–355 kg. Profitability depends on the cost of purchasing calves and feed, reasonable gains, low mortality, and the market price of calves and finished animals.

This enterprise lends itself very well to direct sales to neighbours, friends and co-workers. Working closely with a local abattoir, the veal producer takes orders for halves, quarters, or cuts, cut and wrapped to the buyers' specifications, and usually fast-frozen. If a producer decides to sell cuts of meat, he may end up with a lot of low-

demand cuts to dispose of. Grinding these cheaper cuts and pressing them into burgers may be one way to add value and sell this lower-priced meat.

It should be noted that all meat sold in Ontario must be processed in a provincially or federally inspected packing plant. Any meat that is sold to another province or country must be processed in federally inspected facilities.

A recommended code of practice detailing the proper care and management of veal calves is available from the Ontario Veal Association.

Sheep

Commercial sheep production is similar in many ways to beef cow-calf production, except that everything is scaled down, and it is possible for some breeds to have more than one lamb crop per year. Of course, the physiology and nature of the sheep is different from cattle, and these factors cause some significant differences in the way sheep are managed.

In the most common type of sheep enterprise, the producer keeps a flock of ewes and raises lambs primarily for meat production. Unlike cow-calf producers, most sheep producers finish their own lambs to market weight and condition. For this reason, there are very few lamb feedlot enterprises in the province.

For the diverse Ontario market, lambs are sold over a wide weight range, from 60 to 110 pounds live weight.

Some consumers prefer smaller lambs for the Easter season and are willing to pay a premium for these lambs. To meet this market need, producers breed lambs to be born in early January. This market is limited, however, so a large flush of lamb on the market at this time may actually depress the base prices.

Sheep, like cattle, are ruminants and, therefore, can use forages and rough land to advantage. Sheep, however, require very good fencing. They are relatively small animals, so they can squeeze through fairly small holes. Once on the outside, the defenseless sheep or lamb is vulnerable to attacks by dogs or coyotes. Many shepherds have turned to high-tensile electric fences to keep their sheep in, and the predators out.

Loss of sheep to predators, such as the eastern coyote, (and black bear in some areas) has been an increasing problem in most areas of southern Ontario. Packs of domestic dogs that have gone wild are also a threat in southern Ontario. Predators are often so troublesome that they are cited as a main reason for producers exiting the industry.



demand cuts to dispose of. Grinding these cheaper cuts and pressing them into burgers may be one way to add value and sell this lower-priced meat.

It should be noted that *all meat sold in Ontario must be processed in a provincially or federally inspected packing plant. Any meat that is sold to another province or country must be processed in federally inspected facilities.*

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of one of the parent breeds, or another maternal breed, to produce replacement dams (ewes) for future generations.

The *terminal cross sire* is selected from a breed known to produce fast growth and good meat quality. His lambs are used only for market purpose and are never used or sold as breeding stock.

Table 11 Important Traits for Maternal and Terminal Breeds

fertility	rapid post-weaning growth rate
prolificacy	carcass traits:
lamb survival	light, uniform fat covering
mothering ability	large loin eye area
milk production	high dressing percentage
preweaning lamb growth	wool traits:
	short, dense fleece

In selecting breeding stock, shepherds look for on-farm record information that indicates these traits are present in, or can be transmitted by, the animals being considered. If a shepherd plans to raise his own replacement lambs, it is important to keep these records for selection purposes, and to identify the lambs with tattoos and/or ear tags.

Table 12 Breeds of Sheep and their Use in Ontario Production Systems

North Country Cheviot	Dorset (polled)	Suffolk
Border Leicester	Fleischschaff	Charolais
Romney	Romanov crosses	Canadian Arcott
Dorset	Outaouais Arcott	Texel
crosses of these breeds		Hampshire
		Oxford
		Shropshire
		Southdown

Small numbers of other breeds are also available in Ontario. These might be kept pure for showing or novelty use, such as Jacob sheep, or as a niche market breed such as Southdown or Barbados.

Some breeds are adaptable to breeding more often. The use of these breeds and modern hormone technology in an *accelerated lambing* program is practised by more progressive commercial shepherds. Under this system, one-third of the flock lambs every four months, so that every ewe has three lambings in two years. This enables the shepherd to market lambs at the right size all year.

Accelerated lambing requires accelerated management. It is rarely a good choice for the novice or the part-time shepherd.

Winter lambing is not recommended for commercial lamb production except when it is part of an accelerated lambing system or to access the Easter market. This practice typically results in higher than normal mortality, and prevents the utilization of grass for producing low-cost gains. Lambs and milking ewes need to be fed grains and more supplements during the winter months.

Lambs have their tails "docked" (cut short), and male meat lambs are "wethered" (castrated) as young as possible. The younger the age, the less stress and setback the lambs suffer. An experienced shepherd or veterinarian should be consulted for advice on the best techniques.

Nutrition

Feed requirements (quantity and quality) are greatly influenced by production system, body size, stage of production, prolificacy and rate of growth or stage of development. As a general guide, a 70 kg (150 lb) ewe requires about 2.2 kg (5 lbs) of hay per day, plus up to 0.7 kg (1.5 lbs) of grain per day during late gestation (last six weeks) and early lactation. Total feed required over and above pasture will be at least 950 lbs of hay and 135 lbs of grain per year. Winter lambing and accelerated lambing flocks will have higher nutritional requirements

than spring lambing flocks, which make maximum use of pasture.

Carrying capacity of pastures varies considerably. Intensively managed pastures on excellent soil and rainfall conditions have been known to carry up to 10 ewes and their lambs per acre for the season. Until they have acquired adequate knowledge and management skills, inexperienced producers cannot rely on more than two or three ewes per acre.

Table 13 Sheep Performance Targets

■	10 ewes and lambs per acre of pasture
■	ewe death rate of less than 3%
■	1.8 lambs marketed per ewe per year
■	lamb survival greater than 98%

Wool Production

All sheep must be shorn in the late winter or early spring, to relieve them of heat stress and reduce invasion by parasites. The wool is usually sold to the *Canadian Cooperative Wool Growers (CCWG)*, which in turn, sells it to the textile industry. The quality of wool produced by most Ontario breeds does not command a market premium, so most shepherds find that the sale of wool barely covers the cost of shearing.

There are a number of "custom shearers" who travel across the province shearing sheep. These are well known by local shepherds and by the CCWG and the OSMA.

Specialty Wool Breeds

Leicester and Rambouillet sheep produce long strands of wool of a fibre quality that is of special interest to knitters and spinners. Merino sheep produce a very fine wool used in the textile industry for high-quality garments. These wools are strictly niche products, and specific markets must be created and maintained. Some small producers create lucrative hobbies out of dying, spinning and knitting these wools.

Goats

Goats are raised to produce meat, milk or fibre. Each type has its own set of management requirements and physical needs that must be met if a successful business enterprise is to be established. They are excellent grazers, and are raised primarily on pasture during the growing season, and in open confinement during the winter. Forages, especially hay, form the main part of their diet. This is supplemented with vitamins and minerals at all stages, and with grain according to their energy needs at any particular time.

Female goats are called *does*, breeding males are called *bucks* and young goats of both genders are known as *kids*.

Dairy Goats

Goat milk, like cow's milk, is regulated in Ontario under the *Milk Act*. This means that the milk must be produced in facilities that are sanitary and approved by milk inspectors. Milk is tested for bacteria and other factors, and can be rejected if quality is below standard.

There are a few licensed buyers of goat milk in Ontario. Some of this milk finds its way into the fresh market and is available in grocery stores. Some goat milk goes to hospitals because of its digestibility and hypoallergic qualities. The balance is processed, mainly into cheese.

Saanen, Toggenburg, Alpine and Nubian are the main dairy breeds. Each has its own milk and butterfat production characteristics, and breeders use the different breeds to produce the milk composition they want to send to the dairy. An average dairy herd will produce about 650 litres of milk per doe, containing about 3.2 percent butterfat. More progressive managers strive for 800 litres of milk testing 3.5 percent butterfat. This can be achieved by breeding, feeding and managing for higher production, and by careful selection of replacement does.



Dairy goats are fed and managed very similarly to dairy cows, keeping in mind the great differences in body size, milk production and physiology. Feed industry representatives and OMAFRA livestock specialists can help farmers understand the science and art of feeding and management.

Goats are seasonal breeders, expressing heat periods between August and November. However, breeding at this time reduces milk production and produces the greatest milk flow during the summer when milk prices are low. Commercial dairy goat breeders use artificial stimuli to breed for fall kidding, in order to take advantage of the more lucrative winter milk market.

Like dairy cows, does produce colostrum for the first week of lactation. This "first milk" is loaded with vitamin A and antibodies to help the kids get off to a good start. Once the milk returns to normal, the kids are fed a commercial milk replacer for about three months. Good hay, a starter feed and clean water make up the ration for the developing kids. Grain is added to give energy as the growth rate increases.

Dairy goat analysts agree that a sizable herd is necessary to provide a living income for one person. Minimum economic herd size estimates range from about 60 does to about 120 does for one operator. Commercial herds are much larger.

Table 14 Dairy Goat Performance Targets

■	800 litres of milk per doe
■	3.5 percent butterfat test
■	highest milk production during winter
■	kids weigh 30 lbs at six weeks of age
■	kids weaned off milk replacer at three months

Meat Goats

Goat meat is called *chevon*. It is in high demand during certain religious holidays and festivals. Male kids from dairy goat herds supply most of this meat. These are often purchased as weaned kids by feedlot owners, who market them through the appropriate market outlets. Many meat goats are brought in from Alberta to Ontario markets although there are a growing number of meat goat herds in Ontario.

The Nubian is the most common breed used for meat production. Strains of this dual-purpose breed have been selected for their meat type, more than for dairy production. The Boer goat, from South Africa, is rapidly gaining in popularity. It has been selected specifically for meat production and for nursing its young. It has been used for crossbreeding as a terminal or meat sire on Nubian and other dairy does, although planned cross-

The most
important

economic factors
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species.

breeding is not in general
use yet. Boer goats are in
strong demand by the
larger packers.

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economic factors for goats
are the same as with other
livestock species. Having a
high percentage of kids

born and survive to market gives the greatest return, followed by a fast growth rate and the ability to meet the more lucrative markets. Nubians and Boers exhibit less seasonality than most other species, and will breed over a longer season. Using additional technology to extend the breeding season allows the owner to take greater advantage of off-season markets.

Table 15 Meat Goat Performance Targets

- 180% kid crop (of does exposed to bucks)
- kid death loss less than 10%
- does death loss less than 2%
- wean 95% of all kids born
- cull rate of 15% of does each year

Angora Goats

The "wool" of angora goats is called mohair. It is dyed and spun into specialty yarns for knitting into very fine sweaters, scarves, hats, and other garments. This industry is comprised mainly of hobbyists, many of whom dye, spin and knit their own products.

Angora goats can make an interesting part-time enterprise for the beginning or hobby farmer.

Pork

The three stages of modern pork production are farrowing (birthing), growing and finishing. These operations may be done by one (farrow-to-finish), two or three farmers, depending on the types of resources available to each and the degree of specialization desired.

Breeders of pure breeds raise foundation stock to be used in commercial crossbred production units or hybrid breeding stock producers. This latter group of producers raises breeding stock for commercial farrowing units.

Breeds

Duroc and Hampshire

The Duroc and Hampshire breeds are bred for meat production and carcass quality, but are not known for their reproductive and mothering qualities. They are used, therefore, as terminal cross sires in a commercial breed-

ing program. Growth rate, feed conversion and fat thickness should be considered along with sound feet and legs in selecting a herd sire.

Yorkshire and Landrace

These white breeds have been selected for their ability to conceive and raise large litters. These characteristics are increased when the two breeds are crossed, and the resulting gilts used as the maternal cross and bred to Hampshire, Duroc or Hampshire X Duroc crossbred boars. Growth rate, fat thickness and reproductive characteristics should be considered when selecting gilts for the breeding herd.

The Farrowing Enterprise

Again, like beef and sheep, commercial pork producers rarely reproduce pure breeds, except to use in a crossbreeding program, or as terminal sires. With very few exceptions, Yorkshire and Landrace breeds are the basis of maternal crosses, and Hampshire or Duroc boars are terminal sires in commercial herds. These breeds have proven to be superior in reproductive efficiency and quality meat production, respectively. The resulting three-way cross is the standard market pig produced on most commercial pork farms in Ontario.

The farrowing herd manager keeps a herd of crossbred sows and specializes in raising baby pigs. Baby pigs are usually weaned at three to six weeks of age (four weeks is common) and sold to a feeder at 10–12 weeks, or about 18–22 kg. Beginning producers may wish to wean at six or seven weeks of age until they have an understanding of the process and the animals. Some highly specialized producers, using very high levels of production technology, are weaning as early as ten days.

Productivity is the greatest single factor in profitability for the farrowing or farrow-to-finish manager. Many books are available to provide advice on getting large litters and being able to raise them in a healthy condition. However, the basic formula is simple: use crossbred sows, mate twice when sows are most receptive, wean at 3.5 to 4 weeks and re-breed sows on first heat period following weaning. This formula allows a sow to produce about 2.25 litters per year and, if managed well, to wean more than 20 weanling pigs (weaners) per year.

One of the main causes of pre-weaning death losses in baby pigs is crushing by their mother. To reduce this loss, rails made of steel pipe are fastened around the farrowing pen walls, about 23 cm (9 in.) from the floor and 30 cm (12 in.) from the walls. Specially built farrowing crates are commonly used on commercial pork farms.

The reproductive or heat cycle of sows repeats every 18 to 21 days until the sow conceives. Gilts are first mated usually when they are about seven or eight months



ers, plan to introduce 25-30 percent of the herd in new gilts (young sows) each year.

Nursing pigs are started on a pre-starter feed while still nursing, and as soon as they start to nibble. A fresh dribble of their mother's feed, while not adequate nutritionally, may help them get the idea. At this stage the sow's milk is supplying adequate nutrition. As soon as the piglets are interested in dry food, a prepared pre-starter should be introduced, followed by a pig starter just before weaning.

Piglets that have been raised under a heat lamp should be weaned into warm, draft-free and well-ventilated surroundings with an air temperature of 28°-30°C, and a daily temperature variation no greater than one Celsius degree. This temperature can be reduced by about one degree per week until normal room temperature of about 20°C is attained. This amount of control is difficult to attain in small enterprises, so hovers and heat lamps can be substituted to give specific conditions in areas of the pen.

The owner of more than a few sows cannot remember all of the details needed for proper selection and management, so the design and maintenance of a recording system is important for profitable production. There are nearly as many systems as there are farms, so the best system is the one that fits the manager's personal production goals.

of age, and weigh about 115-120 kg. Their gestation period is 112-114 days.

One boar can service 25-40 sows. Artificial insemination is also available for trained managers, but heat detection is a challenge if no boars reside in the sow barn. Many larger operators use artificial insemination to introduce new genetic strains or to supplement overworked boars.

Skilled feeding to control the condition of the sows is critical. Most sows need 1.6-1.8 kg (3.5-4.0 lbs.) per day of a corn-based balanced ration, from weaning until the last six weeks of gestation. An extra pound or so (450-500 g.) per day should be added during the last six weeks of gestation to ensure healthy growth of the fetuses. A good milking sow will eat up to 7-9 kg (15-20 lbs) when nursing a large litter. Clean, fresh water is absolutely essential during nursing. Fouled water bowls will put a sow off her feed, and dry up her milk supply very quickly.

For planning purposes, allow about 1.5 tonnes of feed per year for each sow, her litters and the supporting boars. The feeds are formulated for each class of pigs, so a feed company representative or livestock advisor should be consulted. Feed represents 65-80 percent of the cost of raising pigs, so efficient feeding and reduced wastage is an important factor in profitability.

Some managers market all sows after about the fifth litter to avoid difficult farrowings that often happen in older sows. To allow for earlier culling of poor perform-

To start with, record breeding and farrowing dates, number of piglets farrowed, weaning dates, numbers and weights. These factors will allow the manager to be ready for farrowing and to replace unproductive sows with more productive ones. It is important to note, however, that sows are more often unproductive through managerial errors than from their own causes, so environmental and management consistency is important for accurate decisions.

Weaned pigs continue to eat pig starter until they are growing well, and can be introduced to a grower feed at about 18 kg body weight.

Table 16 Swine Farrowing Performance Targets

- 2.25 litters per year
- less than 10% pre-weaning deaths
- at least 20 pigs weaned per sow per year
- four-week weaning weight average of 4.5 kg (10 lb)
- less than 5% post-weaning deaths
- 18 kg at 10 weeks of age

The Growing-Finishing Enterprise

The hog feeder buys weaner pigs and feeds them until they reach market weights of 90–100 kg. A hog purchased at about 18 kg will consume 200–225 kg of feed before reaching market weight. Grower feed is usually composed of corn and/or barley, supplemented with soybean and/or canola meal to 16 percent protein level, and a vitamin-mineral premix. If the grower does not have home-grown grains, and is producing his own weaners, he might consider the advisability of selling weaners because of the high feed requirements of feeder and finishing pigs.

Feeding pigs to market can be a viable option for the part-time farmer. It is short-term, it can be started and finished quickly, and decisions to continue can be made according to fairly accurate price predictions.

Uniformity of daily feeding and cleaning practices, a constant supply of clean water, a comfortable, draft-free but well-ventilated surrounding and a good set of scales are the only requirements for successful production. Avoiding overcrowding, and identifying and treating sick animals are important to profitable pork production.

It is recommended that an all-in, all-out system of management be used for feeder pig production. This allows the manager to sanitize the facilities and break any disease cycle between batches.

Finished hogs are sold through *Ontario Pork*. New producers should consult Ontario Pork regarding pro-

ducer registration, location of marketing yards, and information on the grading system.

Hogs are sold on a dressed weight basis according to 24 numerical grades. These are indices around 100 that indicate the market value of each carcass. A producer may receive from 88 to 112 percent of the average market price for the week, according to the carcass value of the hog. This index is based on a combination of weight and leanness of the carcass. Ontario pigs average around 105 index points.

In feeder enterprises, controlling feeder pig sources and reducing the incidence of disease are important factors in maximizing the profit potential. The pork market is quite volatile and cyclical, so attention to market conditions and trends is useful. The necessity of good records—both production and financial—cannot be overemphasized.

Table 17 Feeder Pig Performance Targets

- less than 3% death loss
- pigs reach market weight by 160–180 days of age from birth
- average grade index 105 or better
- less than 225 kg feed per pig to market weight after weaning

The Farrow-to-Finish Enterprise

This is really a combination of farrowing, growing and finishing enterprises. The advantages to combining all phases of pork production are mainly in spreading the risk of low market prices at any of the stages, and of reducing stress caused by moving and mixing pigs.

The disadvantage is mainly that it demands extra resources of facilities, time and capital, and detracts from the ability to specialize in one area of production.

Horses

An excellent supply of general information on management of recreational horses is available from many sources including your local library, tack shop, feed store, etc.

Horse farms are treated differently than other livestock farms by the Farmland Property Tax Program (FPTP) and the federal Goods and Services Tax Program (GST). In the context of the FPTP, the horse is considered to be a recreational animal unless it is used for reproduction or meat purposes. Progeny of horses bred and sold from the farm qualify as farm income, as do other farm animals. The resale of a purchased animal also qualifies, providing the animal is not resold within 60 days of purchase, and it is used for breeding. Stud fees, on the other hand, do not qualify as farm income.

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The income received for boarding horses or running a riding stable does not qualify as farm income. Likewise, growing one's own hay and storing it as feed does not qualify as farm income, even if the value of the hay is greater than \$7,000. The hay qualifies as farm income only if it is sold. However, if the farm is being leased by a tenant with a valid farm business registration number, who generates at least \$7,000 Gross Income from farming operations, the property will qualify to be taxed at the 25 percent rate.

Several GST rules vary from traditional agriculture when applied to the horse industry. If farmers generate more than \$30,000 Gross Income—as opposed to Gross Farm Income—they must register with Revenue Canada to collect GST. They may register if their gross income is less than \$30,000, as long as they have a "reasonable expectation" of profit.

Although most processed feeds for livestock are zero rated for GST (i.e., GST assessed at 0 percent), processed horse feeds are subject to the 7 percent GST rating. (All supplements, vitamins, minerals, etc., are charged GST, regardless of the target species.) The domestic sale of horses, unlike most other livestock, is also subject to 7 percent GST.

As with any farming enterprise involving animals, horse farmers must decide whether to grow their own feed, have it custom grown, or rent the land to a tenant to farm. This decision is an economic one, based on the cost of providing feed to the horses. If only a few horses are

kept, it may be more feasible to purchase the hay than to own the expensive machinery to harvest. Purchasing hay also gives horse owners more flexibility in years when the weather makes it difficult to make good hay. At these times an owner may be able to purchase hay from other areas.

Boarding Stables

Owners of small farms often consider boarding horses or operating a riding school as a means of earning income. This can be a legitimate rural business if the owner has the facilities, the means and the skills to run such an enterprise. Because this business involves having many people on the property who are not employees, with access to the animals, the operator should consider a number of factors before starting this type of enterprise:

- **Why do I want to board horses? Do I have a realistic financial goal?**
- **Do I have sufficient knowledge of horses to deal with a crisis (e.g., sickness or injury)? Am I prepared to deal with an unruly animal?**
- **How do my facilities rank against others in the area? Will I have to complete major renovations to be competitive?**
- **Is there a demand for new boarding services in the area? Has there been much turnover in local boarding services and, if so, why?**

■ Boarding horses is very much a service industry—how are my public relations skills? Am I prepared to deal with boarders' demands and with the loss of privacy? How will I deal with a difficult boarder?

■ Do I plan on offering lessons? Will I be giving the lessons or do I need to hire an instructor? What qualifications will I require in an instructor? Will I provide the horses, or will the students supply their own? What additional liability coverage do I need if offering lessons?

■ Have I completed a realistic budget of my costs (including feed and bedding, liability insurance, renovations and upgrades, wages, veterinary and medical, farrier, etc.) and compared it to my income projections (board, lessons, possible extra fees, show winnings, etc.)

■ What do others charge for boarding and lessons? Should I charge the same, more or less?

Breeding

Breeding horses is a fairly specialized business. Quality breeding stock is expensive, and the clientele varied, depending on the type and quality of horses being bred. Successful breeders know the industry they are breeding for, and the customers they can attract. Prospective breeders should consider the following questions in planning their enterprises:

■ What do I realistically expect to achieve from breeding horses?

■ What type of horse do I wish to breed (e.g., conformation horses, performance horses, standardbreds, quarters, paints)? Can I compete successfully in this business?

■ Do I have the quality of stock that is in demand in this market?

■ Do I have the knowledge to deal with mares and foals?

■ If considering standing a stallion: Do I have the knowledge and quality? Do I have the facilities to house mares to be bred, possibly with foals at side? What will I charge for stud fees and mare care? How will I promote my stallion?

■ How old will the progeny be when I sell them? Is there a market for this type of horse? Is the market local? Am I prepared to dedicate the time and effort required to promote the progeny?

■ Will I have a difficult time parting with the foals at selling time?

Commercial horse farms experience a very high rate of failure. Careful planning before entering the industry will help to ensure financial success of the business.



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Commercial horse farms experience a very high rate of failure. Careful planning before entering the industry will help to ensure financial success of the business.



Small Flock Poultry Production

Laying hens, chickens and turkeys are all supply-managed commodities; i.e., quota (the right to market product from these commodities) must be purchased prior to starting this enterprise. All product must be marketed through the various marketing boards. Because of the very high cost of quota, commercial poultry production is an extremely expensive industry for the newcomer to enter.

Hobby farmers may sell eggs from up to 99 laying hens without purchasing quota. In contrast, the typical commercial egg producer owns approximately 11,000 birds, although many businesses exceed 100,000 laying hens.

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Hens begin producing eggs at about 20-22 weeks of age and continue to lay for about 12 months. Laying hens need about 14 hours of bright light per day for maximum egg production. This is usually provided by fluorescent

lighting on automatic timers. The average hen in Canada lays about 300 eggs per year. Unless the hens are inseminated, their eggs will be unfertilized and, therefore, incapable of producing chicks.

All eggs sold, except at the farm gate, must be graded at an official grading station. Only grade A eggs may be sold for table use, and cracked eggs may not be sold because of the danger of bacterial infection.

Some hen breeds, such as the Rhode Island Red or Barred Rock, lay brown eggs, while others, such as the White Leghorn and the commercial egg-laying hybrids, lay white eggs. There is no difference in nutritional value or flavour between brown and white eggs, but on some markets, brown eggs command a premium. This extra price is more than offset to the commercial producer by the much higher rate of production and lower feed consumption of the white egg-laying strains.

With meat birds, including broilers, roasters and Cornish hens, quota must be purchased if the farmer or hobbyist plans to keep more birds than the family can personally consume. Private selling of meat chickens is a contravention of the *Farm Products Marketing Act*. Broiler chicken quota is sold on a per-unit basis, with a minimum purchase of 15,000 units (chicks) required to become a new commercial producer. The new producer must also own the facilities to raise these birds.

Turkey growers may sell up to 50 birds per year without owning quota.

Unlike the dairy industry, poultry quota is not sold through an organized quota exchange. Further information on quota practices is available from the appropriate marketing board.

Raising Birds

Laying-hen pullets may be purchased as day-old chicks from a commercial hatchery, or at 19 weeks as ready-to-lay pullets. Meat birds are purchased as day-olds. Day-old chicks need a temperature of about 32°C at the level of their backs for the first week. The temperature should then be dropped by 2°-3° per week until a temperature of about 21°C is reached. Broiler chicks are ready for market at six weeks of age, roasters at nine weeks.

The chicks are fed a complete ration with clean, fresh water available at all times. Day-old chicks need room-temperature water to avoid being chilled. Both layers and meat birds can be fed a complete ration in the form of mash, crumble or pellets. This feed is prepared by highly competitive feed companies who employ qualified nutritionists and use very sophisticated mixing and pelleting equipment. Small operators should not try to make their own poultry feeds.

Poultry are very susceptible to a number of diseases. To assist in the prevention of disease, use fresh, clean litter, isolate poultry flocks from other birds and do not mix birds of different ages in the same pen. Ensure that drinking water is fresh and uncontaminated at all times. Manage ventilation carefully, and check the flock several times daily for sick or dead birds.



What makes an alternative unique
is not only that it is unusual, but
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Alternative Farming Enterprises

New or part-time farmers often look for opportunities that can be carried out on a small land base, on a part-time basis, or with a high income potential. Non-traditional crop or animal species often lend themselves to one or more of these categories.

Existing farmers often look to alternative (non-traditional) crops or livestock to:

- diversify their existing business and income base
- satisfy a market niche
- create employment opportunities for other family members
- make use of unused or underutilized facilities, buildings or land

An alternative or non-traditional enterprise might be described as any venture that is unusual or not normally carried out in an area. Cranberries, for example, could be considered an alternative crop for eastern Ontario, where they are not now grown, but not for Muskoka, where there are two thriving cranberry farms. Bison could be an alternative to cattle anywhere in Ontario, because the population of farmed bison is very low in the province.

What makes an alternative unique is not only that it is unusual, but also that there is no marketing pattern or infrastructure established. In nearly all cases, the producer has to find and develop the market for the product. How well he or she accomplishes this is at least as important as how well he or she produces the product. Market-



IMPORTANT NOTE CONCERNING THE FOLLOWING PAGES

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TWICE IN ORDER TO OBTAIN THE BEST
REPRODUCTIVE QUALITY**

**USERS SHOULD CONSULT ALL THE PAGES
REPRODUCED ON THE FICHE IN ORDER TO OBTAIN
A COMPLETE READING OF THE TEXT.**

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ing and production must be considered separate parts of the same business when alternatives are considered, and so development of the total business must be taken into account in the planning phase.

Value-added opportunities also exist as alternatives. For example, a market gardener may add a farm store to the business and by-pass the wholesale market with all or part of the produce. A simple act of cleaning, sorting and packing produce for an existing market is a value-adding activity if it results in a higher price being paid for the produce. A fruit grower may make jams or pies for a specialty market, or a pork producer may offer specialty pork cuts directly to the consumer.

Whatever the alternative enterprise, the market will be limited, and the entrepreneur will need to learn new marketing skills in order to be successful.

Before investing in any alternative enterprise, **consider the following:**

■ **What, exactly, are your products? What services or special features are included with them (packaging, delivery, etc.)? What made you decide on these products?**

■ **What do you know about the market? Is there a demonstrated market demand? Is there room for expansion of this marketplace? Who are your target customers? How much volume are they likely to buy in an average year? What price are they willing to pay (lowest, highest and average)? What factors**

influence price? Are they currently buying similar products? Where, how much and from whom?

■ **Who are the competitors that supply these or similar products in the same marketplace? What products and services do they provide? At what price? Can you provide the products and services competitively with current suppliers? What do you have to offer your customers that present suppliers do not? How will your competitors likely react to your entry into the marketplace?**

■ **How will you market the products? Is there an existing marketing infrastructure? What methods of distribution work best (distributors, retailers, direct sales, cash and carry)? What will you do to attract customers? What promotional methods will you use to reach your target audience? What factors will make them come back again? Do you have the resources (personal, financial, time, etc.) to access that market?**

■ **What methods of pricing best suit this product? Is it a "lowest price" competitive product, or a "premium quality" product? Is the packaging and promotion consistent with the quality and image of the product?**

■ **Are there any regulations or licenses governing the production, handling and marketing of the products?**

Where can you find out more about growing, raising, processing, sorting, packaging, transporting, handling and marketing the product(s)?

What are your anticipated costs of production? Do the potential returns justify the investment and risk required?

Market Research

Surveys, personal interviews, focus groups, literature reviews or test marketing activities may constitute market research. These tools can help entrepreneurs find the information they need for deciding if it commands a higher price, whether to proceed with the proposed venture. It is important, however, that the market research reflect the needs and desires of the most likely buying group. The selection of the method and location of the survey activities is crucial to getting reliable information.

Table 18 Alternative Livestock and Crops

ALTERNATIVE LIVESTOCK ENTERPRISES	ALTERNATIVE CROPS
ratites (emu, ostrich and rhea)	ginseng
fish farming (aquaculture)	hemp
bison (buffalo)	stevia
deer species and elk	herbs (culinary, medicinal and aromatic)
wild boar	sweet potatoes
milking sheep	cranberries
camelids (llamas and alpacas)	wild blueberries
fur species (mink, fox and chinchillas)	
rabbits	
game and specialty birds (pheasants, partridge, quail and squab)	

Table 19 Other Alternative Enterprises

SMALL-BUDGET ALTERNATIVES	OTHER ALTERNATIVE ENTERPRISES
direct meat sales	bed-and-breakfast
meat pies and other consumer products	farm vacations
fruit and vegetable products	private campground
herb products	on-farm bakery or meat store
direct sales enterprises (roadside stands, pick-your-own, farmers markets, etc.)	farm repair shop or metal-working
	furniture-making or wood-working

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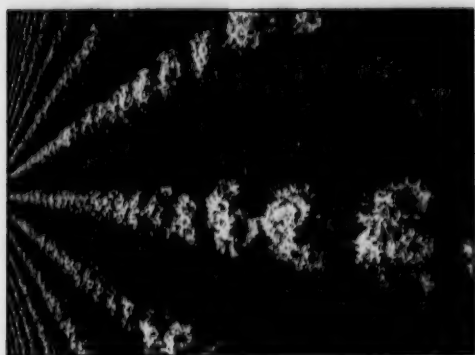
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Common Agricultural Terms and

Definitions

Accelerated lambing—a system by which the shepherd tries to produce three lamb crops in two years.

Backgrounding—feeding beef market animals a low-energy ration for a period of time after weaning to prepare them for feedlot feeding.

Balanced ration—a feed or group of feeds that supply all of the required nutrients to an animal in the correct amounts.

Barrow—a castrated pig.

Buck—a male goat or deer.

Cash crop—a grain or oilseed crop grown and sold directly off the farm, rather than being fed to livestock on the farm where it is grown.

Castration—the process of removing the testicles of male animals. This is done to improve meat quality and keep animals from becoming sexually active. See "barrow," "gelding," "steer," "wether".

Companion crop (nurse crop)—a crop grown in combination with forage being established to provide returns

from the field in the year of establishment and/or to provide protection for the forage seedlings. Oats are often grown as a companion crop.

Creep—a protected area where young animals are allowed to enter but larger animals are not.

Creep feeding—the practice of providing young animals with additional feed while they are still nursing.

Concentrate feed—a feed that is low in fibre and high in energy. This term is frequently used to describe a "supplement" that is high in protein.

Colostrum—the first milk of a mammal after giving birth. It is rich in vitamins and antibodies for the new offspring.

Cropland—land used to grow crops.

Custom work—Tillage and cropping operations that are hired.

Custom Operator—a contractor who performs custom work.

Dehorning—the process of removing horns from animals.

Digestible protein—the protein in a feed that can be utilized by an animal. It is usually expressed as a percentage of total protein.

Doe—a female goat or deer.

Dressed weight—the weight of an animal's carcass after the hide and/or organs have been removed.

Dressing percentage—the weight of the carcass as a percentage of the weight of the live animal.

Equity (net assets)—The value of the assets of a business that remain after the liabilities, or debt, has been subtracted. It is usually expressed as a percentage.

Estrus or oestrus—Also known as "heat period." The time in a female animal's reproductive cycle when she is receptive to the male and may conceive.

Farm business—a commercial farm undertaking that is operated for financial gain.

Farm Enterprise—a unique portion of the farm business, which is expected to be profitable in itself, and to contribute to the success of the total business.

Feeder or replacement cattle—cattle requiring further feeding for market. Sometimes called "stockers."

Feedlot—a fenced yard or open building where cattle or sheep are finished for market.

Forage—a crop of which the whole plant is used as a feed, e.g.: grasses, clovers, corn silage, etc.

Frame—a description of the bone structure of an animal.

Fungicide—a chemical used to control fungi.

Gelding—a castrated horse.

Gestation period—the length of time between conception and birth.

Gilt—a young female pig prior to weaning her first litter.

Grade (commercial) livestock—purebred cattle that have not been registered with the appropriate breed association or registration authority.

Green manure—green plant material, usually legumes, that is grown specifically to be ploughed down to provide organic matter and nutrients to the soil.

Heat—see "Estrus."

Heat units—values based on the relationship between temperature and crop development. This is used in Ontario to measure the suitability of an area for growing a specific species or variety.

Hedging—Using commodity futures to stabilize the value of a commodity.

Heifer—a young cow, normally before having her first calf, or prior to weaning her first calf.

Herbicide—a chemical used to control weeds.

Heterosis—a genetic phenomenon in crossbreeding that results in the offspring having greater size, strength and growth rate than the average of its parents. Also known as "Hybrid Vigour."

Hybrid vigour—see "Heterosis."

Insecticide—a chemical used to control insects.

Kid—an immature goat.

Lactation—the period of time when an animal produces milk or the amount of milk produced during that period.

Major Elements—minerals that are required in relatively large amounts by animals. E.g.—Calcium, Phosphorus, Salt, Potassium and Sulphur.

Minerals—inorganic elements that have a specific function in animal nutrition. These are sometimes mixed with vitamins.

Miticide—an insecticide used to control mites.

Oilcake—a high-protein byproduct from the extraction of oils from oilseeds. It is often used as a protein supplement for livestock feed. Also known as "oilseed meal."

Oilseed—a seed from which oil is extracted for commercial use e.g., canola, soybean, flax (linseed).

Oilseed meal—see "Oilcake."

Pasture—grassland used to graze livestock.

Pasture species—grasses and/or legumes that are grown for pasture use.

Performance testing—a program to evaluate the performance of livestock characteristics such as rate of gain or milk production.

Pesticide—a general term to include herbicides, insecticides, miticides and fungicides.

pH—a measure of acidity or alkalinity. A measure of less than 7.0 on the scale indicates acidity; greater than 7.0 indicates alkalinity, and 7.0 is neutral.

Palled—a description of animals that would naturally grow horns, but do not grow horns because of genetic makeup.

Protein—the nitrogen-containing portion of a feed. This is called "crude" or "total" protein. It is used by the animal to build and replace muscle tissue (see "Digestible Protein").

Pullet—a hen less than 19 weeks of age.

Purebred—an animal whose parents are both of the same breed and who is registered in the herd book of the breed association or livestock registry.

Quota—the right to market a stated amount of certain farm products, as regulated by some marketing boards under the Farm Products Marketing Act.

Ration—all of the nutrients or feed eaten by an animal in a 24-hour period. Also called "diet." This is often used erroneously to describe a prepared feed mix such as a "dairy ration" or "growing ration."

Registered (pedigreed) livestock—purebred livestock for which registration papers are available (see "Purebred" and "Grade").

ROP (Record of Performance)—an official performance testing program for animals.

Roughage feed—feed high in fibre and low in energy; e.g., corn silage and hay.

Ruminant—an animal with four compartments in its stomach; e.g., cattle, sheep, goats and deer. Ruminants are able to effectively utilize feed containing a high proportion of roughage or fibre.

Runoff—that portion of surface water that flows across the land, carrying soil particles, plant residue and other materials into adjacent watercourses.

Self-feeding (free choice)—allowing animals to have constant access to feed.

Septic system—A sanitary means of disposing of wastewater from rural homes. The system consists of a septic tank and a tile (weeping) bed.

Shrink—an animal's weight loss during transportation.

Springer—a cow that is due to calve shortly.

Steer—a castrated bull.

Stream buffer—a strip of land planted with grass and/or trees along a watercourse that is intended to restrict the flow of surface water into the stream and prevent stream bank erosion. The buffer may be fenced to restrict livestock entry.

Supplement—a concentrated feed additive that is rich in proteins, vitamins and/or minerals, to be mixed with grains and other feed to balance the nutritional needs of livestock.

Swine—a collective term for all pigs. Swine farmers prefer to be called pork producers rather than swine or hog farmers.

Systemic insecticide—a product that controls parasitic insects on livestock by entering the animal's bloodstream.

TDN (Total Digestible Nutrients)—a measure of the energy value of a feed.

Thoroughbred—a breed of horse. This term is not to be used to describe a "purebred" animal.

Trace elements—minerals that are required in small quantities, but essential for animal health, e.g., iron, magnesium, cobalt, etc. Sometimes called trace minerals or minor elements.

Trunk pruning—the act of trimming the branches from a tree trunk to ensure development of knot-free wood. Branches are pruned before they reach one inch in diameter.

Water Table—the upper limit of the ground that is saturated with water. This changes with time of year, dryness of season and nature of the soil.

Weanling—an animal recently weaned from its dam (mother).

Weeping bed—a tile grid for disposal of household wastewater in a septic system.

Wether—a castrated ram.

Yearling—an animal that is approximately one year old.

References for New Farmers

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Head Office location

1 Stone Rd. W., Guelph ON N1G 4Y2
1-888-466-2372

For information and services, programs and resources, consult the Government Information Centre (p. 108)

or OMAFRA web site: www.gov.on.ca/omafra

Agricultural and Rural Statistics

OMAFRA web site:
www.gov.on.ca/omafra/english/infores.html
Statistics Canada web sites:
www.statcan.ca/english/services/
Also: ww2.statcan.ca/english/census96/list.ht

Water Supply and Quality

Water Well Records Search Line, OME: 1-888-396-9355

Water Wells, OMAFRA Best Management Practices series booklet

Waste Disposal

Composting Livestock Mortalities, OMAFRA Factsheet order #97-001

Water Management, OMAFRA Best Management Practices series booklet

Food for Thought, Ontario Farm Animal Council publication

Drainage

Drainage Legislation, OMAFRA Factsheet Order #89-166
Water Management, OMAFRA Best management Practices series booklet

Ponds

Building a Pond, Landowner Resource Centre Extension Notes. To order, call 1-888-571-INFO
web site: www.3.sympatico.ca/lrc

Water Management, OMAFRA Best Management series booklet

Woodlots

Ontario Woodlot Association, P.O. Box 599,
5524 Dickson St., Manotick ON K4M 1A5
Phone (613) 258-0110, fax (613) 258-0207
email: info@ont-woodlot-assoc.org
web site: www.ont-woodlot-assoc.org

Ontario Forestry Association, 200 Consumers Rd.,
Suite 307, North York ON M2J 4R4
(416) 493-4565, fax (416) 493-4608
email: forestry@oforest.on.ca
web site: www.oforest.on.ca

Various Extension Notes, Landowner Resource Centre
1-888-571-INFO
web site: www.3.sympatico.ca/lrc

Environmental Farm Plans

Ontario Soil & Crop Improvement Association,
1 Stone Rd. W., Guelph ON N1G 4Y2
1-800-265-9751, fax (519) 826-4224
email: oscia@netcom.ca
web site: www.ontariosoilcrop.org

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Developing a Marketing Plan, OMAFRA Factsheet order
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AGRICORP, P.O. Box 3660, Stn. Central, Guelph ON
N1H 8M4 1-888-AGRI-999
web site: www.agricorp.com

Managing Market Risk, Introductory Course Home Study
Manual: Agriculture and Agri-Food Canada Publication
1976E

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www.agr.ca/progser/ontsnr.html

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www.gov.on.ca/omafra/english/busdev/human.htm
Ontario Agricultural Human Resources Committee:
www.farmshow.net/oaahr

Canada Pension Plan:
www.hrdc-dfhc.gc.ca/isp/common/cpptoc_e.shtml

Employment Insurance:
www.hrdc-dfhc.gc.ca/ei/common/home.shtml

Workplace Safety and Insurance Board:
www.wsib.on.ca/web/web.nsf/public/homepage

Ontario Ministry of Labour:
www.gov.on.ca/LAB/main.htm

Small Business Page: www.rc.gc.ca/business/

Human Resource Office for Employers: www.hroe.org

Ontario Farm Safety Association: www.fsai.on.ca

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#99-011

Farm Financial Analysis and Planning Workbook, OMAFRA
Publication 37

Money Matters: Guide to Farm Financial Planning, OMAFRA
Publication 379

Ontario Farm Record Book, OMAFRA Publication 540

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web site:
www.gov.on.ca/OMAFRA/english/busdev/struct.htm
 OMAFRA Business Development tool downloads:
www.gov.on.ca/OMAFRA/english/busdev/download.htm#tools
 Farm Lease Agreement worksheets, order #s 90-93
 Custom Work Rates survey: available at OMAFRA field offices or on web site

Naming Your Business

Ontario Business Connects web site:
www.ccr.gov.on.ca/obcon/welcome.htm

Farm Business Registration and Farmland Property Tax Programs

OMAFRA Farm Business Registration and Farmland Property Tax Programs
 Tel. (519) 826-3446 or 1-800-469-2285
 Fax (519) 826-3170
 email: farmltax@omafra.gov.on.ca
 web site:
www.gov.on.ca/omafra/english/infores/farmltax.html

Forested Land

The following two web sites provide links to virtually every forest-related web site in Canada:
www.canadian-forests.com
www.forest.ca
 Ministry of Natural Resources web site:
www.mnr.gov.on.ca/MNR

Federal Taxes

Revenue Canada web site:
www.rc.gc.ca/~paulb/gst/rc4022/english/index_e.htm
 —General Information for GST registrants
www.rc.gc.ca/~paulb/tel/iso.htm#ON
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web site: [www.ofa.on.ca/aglibrary/Research/Nutrient Management Planning Strategy/](http://www.ofa.on.ca/aglibrary/Research/NutrientManagementPlanningStrategy/)

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Starting a Commercial Greenhouse Business, OMAFRA Infosheet (see web site)

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Organic Farming

Canadian Organic Advisory Board, c/o Robert McDonald, #610, 910-7th Ave., SW, Calgary, AB T2P 3N8
web site: www.coab.ca



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Common Breeds of Beef Cattle in Ontario, Part 2, Factsheet order #89-125

Veal Calves

OVA web site: www.cattle.guelph.on.ca/ontveal.html

Sheep

Introduction to Sheep Production in Ontario, Ontario Sheep Marketing Agency, 130 Malcolm Rd., Guelph ON N1K 1B1, (519) 836-0043, fax (519) 836-2531
email: osma@freespace.net

web site: www.freespace.net/~osma

Sheep Production Handbook, American Sheep Industry Association, Englewood, Colorado 80112
(303) 771-3500

The Veterinary Book for Sheep Farmers, Henderson, Paul C., ISBN: 0-85236-189-0. Available from Canadian Cooperative Wool Growers, c/o Ontario Stock Yards Inc., Cookstown, ON L0L 1L0
(705) 458-4800

Pigs

Ontario Pork web site: www.ontariopark.on.ca

Poultry

The Poultry Market web site:
www.agr.ca/misb/aisd/poultry/poulsece.htm

Additional Resources

Publications

The Ontario Ministry of Agriculture, Food and Rural Affairs produces a wide range of publications and factsheets in addition to those suggested. Current publications and factsheets are listed in the OMAFRA Publications Catalogue, which is available upon request. Contact your local field office or

Publications Order Desk

OMAFRA

1 Stone Road West

Guelph, ON N1G 4Y2

Tel. (519) 826-3700 or

1-888-4-OMAFRA (1-888-466-2372)

Fax (519) 826-3358

Additional OMAFRA Publications:

www.gov.on.ca/omafra/english/products/product.html

Best Management Practices

A series of 13 publications outlining recommended practices for: Farm Forestry and Habitat Management; Field Crop Production; Fish and Wildlife Habitat Management; Horticultural Crops; Integrated Pest Management; Irrigation Management; Livestock and Poultry Waste Management; No Till; Making It Work; Nutrient Management; Pesticide Storage; Handling and Application; Soil Management; Water Management and Water Wells.

Agriculture, food and rural organizations

A contact list is available from your local OMAFRA field office or on the OMAFRA web site at www.gov.on.ca/omafra/english/rural/list.html.

Distance Education

University of Guelph

Independent Study/OAC Access

Guelph ON N1G 2W1

(519) 767-5050; email: handbook@access.uoguelph.ca

www.uoguelph.ca/istudy

or: your nearest University School of Business

